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Comparing the NPS MBA resident and distance learning programs

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MBA PROFESSIONAL REPORT

COMPARING THE NPS MBA RESIDENT AND DISTANCE LEARNING PROGRAMS

June 2017

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Distance learning (DL) instructional modes are of interest to the Naval Postgraduate School (NPS) as the school provides access to graduate education for officers posted at remote duty stations. However, studies report mixed academic achievement for general DL versus resident students, with similarly mixed findings for students pursuing master of business administration (MBA) degrees. Two 2016 studies evaluating NPS programs overall report lower completion rates for DL versus resident students. This MBA project was conducted to help find similarities and/or differences in four evaluation areas: entry requirement Academic Profile Codes (APC), grade point averages (GPA), graduation status, and student survey responses on perceptions of program experience. Data analyses were performed without controlling for student, course, or program-specific factors to suggest general areas for a more in-depth study. Project findings show little or no between-group differences in GPA, but DL MBA students were less likely to graduate than resident peers, who also had greater success in most math-intensive courses. These findings may support further studies of factors that may affect student success within DL versus resident programs.

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COMPARING THE NPS MBA RESIDENT AND DISTANCE LEARNING PROGRAMS

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Submitted in partial fulfillment of the requirements for the degree of

MASTER OF BUSINESS ADMINISTRATION

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Distance learning (DL) instructional modes are of interest to the Naval Postgraduate School (NPS) as the school provides access to graduate education for officers posted at remote duty stations. However, studies report mixed academic achievement for general DL versus resident students, with similarly mixed findings for students pursuing master of business administration (MBA) degrees. Two 2016 studies evaluating NPS programs overall report lower completion rates for DL versus resident students. This MBA project was conducted to help find similarities and/or differences in four evaluation areas: entry requirement Academic Profile Codes (APC), grade point averages (GPA), graduation status, and student survey responses on perceptions of program experience. Data analyses were performed without controlling for student, course, or program-specific factors to suggest general areas for a more in-depth study. Project findings show little or no between-group differences in GPA, but DL MBA students were less likely to graduate than resident peers, who also had greater success in most math-intensive courses. These findings may support further studies of factors that may affect student success within DL versus resident programs.

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LIST OF ACRONYMS AND ABBREVIATIONS

AACSB	Association to Advance Collegiate Schools of Business
APC	academic profile code
AY	academic year
CQPR	curriculum course quality point rating
CoreQPR	MBA core course quality point rating
DL	distance learning
DON	Department of the Navy
GPA	grade point average
GSBPP	Graduate School of Business and Public Policy
GSEAS	Graduate School of Engineering and Applied Sciences
GSOIS	Graduate School of Operational and Applied Sciences
GSS	graduating student survey
LMS	learning management system
MBA	Master of Business Administration
MIT	Massachusetts Institute of Technology
MOOC	massive open online courses
MSCM	Master of Science in Contract Management
MSM	Masters of Science in Management
MSPM	Master of Science in Program Management
NASPAA	National Association of Schools of Public Affairs and Administration
NPS	Naval Postgraduate School
OIR	Office of Institutional Research
OR	Office of Registrar
QPR	quality point rating
SIGS	School of International Graduate Studies
TQPR	total NPS course quality point rating
VTE	video-teleconferencing technology
WASC	Western Association of Schools and Colleges
WWW	World Wide Web

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I. INTRODUCTION

This project compares the academic experience of Naval Postgraduate School (NPS) students across two different delivery modes, namely the MBA resident and distance-learning (DL) programs. This project identifies differences in student outcomes for DL as compared to resident students in an attempt to address a highly debated topic of interest in higher education. Specifically, this study examines between-group differences in four evaluation areas, entry requirements, grade point averages (calculated to assess course and program specific variation), graduation status, and student survey responses on program experience, particularly focusing on students' academic achievement and program perceptions. Project findings inform more in-depth studies of effective DL courses and programs for military and defense personnel, and may contribute to the development of higher-quality computer-assisted education.

Accredited higher education is an essential requirement that can better equip those serving in military and working for the department of defense to prepare, enhance readiness, and meet the nation's current and future defense needs. Expanding access to quality higher education among military officers and defense personnel by delivering courses and programs through DL instructional modes could increase their opportunities for preparedness and mission readiness. DL instruction could further allow officers to complete their degrees in a timely manner, without geographic limitations, and provide a continuing ability to fulfill their assignments at their duty stations.

Like civilian institutions, the military appreciates the reduced financial costs made possible by online higher education instruction (Fodor 2016). However, the military also shares the need to assess and improve DL program quality, especially as compared with traditional resident programs. In addressing these needs, two outcomes are especially important: students' achievement as shown by factors recorded in academic transcripts, and student survey responses on their academic program experience. This MBA project addresses these two outcomes through one question: What are the similarities and differences in the MBA academic experience of resident and DL NPS students? To

answer this question, I conducted a review and analysis of data of NPS MBA students who began their NPS MBA programs in academic years (AY) 2006–2013.

A review of research findings conducted in civilian institutions of higher education provides important background information on differences in course or program success observed for resident and DL students. Furthermore, some studies reviewed were specific only to MBA courses or programs. For example, one relatively recent study by Harmon, Alpert, and Lambrinos (2014) showed little or no difference in student success levels by delivery model for coursework that requires minimal math. In an earlier study also conducted in civilian institutions, Bruce (2010) found DL students rated the quality of their learning experience as above average. However, Fodor (2016), whose study was conducted on NPS student populations across all programs, reports that NPS DL students have lower overall GPAs. Similarly, Bacolod and Chaudhary (2016), whose study examines NPS student achievement in overlapping degree programs, report that two success outcomes, grade point average and graduation, are lower for NPS DL students in programs with a resident and DL option.

NPS's Graduate School of Business and Public Policy (GSBPP), one of four schools at NPS, is the only school currently offering defense-focused MBA degrees. GSBPP offers these degrees through six resident and three DL programs, for a total of 9 degrees that encompass 18 specialized programs designed to meet the needs of military and defense personnel. For this MBA project, I collected and analyzed data for GSBPP MBA resident and DL student cohorts who began in AY2006 through AY2013. I grouped the student data to obtain representative student samples identified by program instruction mode, gender and U.S. military or civilian status.

Four student evaluation factors were compared after collecting and analyzing the student data sample: NPS program entry requirements, known as Academic Profile Codes (APC), three different NPS specific grade point averages (TQPR, CQPR, CoreQPR), student graduation rates, and student feedback from the Graduating Student Survey (GSS). These factors were examined using t-tests comparing difference in means. These MBA project analyses did not control for other factors correlated with delivery mode and outcomes.

Findings from the project analyses for the four student evaluation factors were mixed. For example, t-tests examining the different grade point averages showed that between-group differences for resident and DL MBA students were mixed, depending on how these averages were calculated (i.e., all courses, MBA program required courses, courses required by both resident and DL MBA programs). However, for all three grade point average types, the cumulative mean grade point averages of MBA DL students were higher than those of resident program students. These results align with some of the findings in the literature reviewed, that DL students perform typically as well as resident students in less math intensive programs (Ni 2013). But, graduation rates were lower for the DL MBA program students aligning with research completed by Fodor (2016) and Bacolod and Chaudhary (2016), which observed NPS DL students across all programs are less likely to graduate than NPS resident students. In the review of selected responses from the graduating student survey (GSS), MBA students in DL programs rated their academic experience higher than their peers enrolled in resident programs.

This MBA project is comprised of six chapters, organized as follows. Chapter I presents an introduction and the purpose of my project. Chapter II provides the history and background of the institution and the MBA programs. Chapter III reviews the literature relevant to resident and DL MBA student success. Chapter IV describes the data analyzed, and explains the methodology used for statistical tests employed in analyzing the data. Chapter V discusses the results of these statistical tests. Chapter VI presents the conclusions, limitations, and recommendations.

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II. INSTITUTIONAL BACKGROUND

A. MBA HISTORY AND NPS

The Naval Postgraduate School (NPS) was established as the School of Marine Engineering at the U.S. Naval Academy in 1909, and renamed the Naval Postgraduate School in 1912 (Naval Postgraduate School [NPS] 2016). In the mid-20th century, NPS was legislated to be a degree awarding, accredited institution. In 1949, NPS was reorganized and relocated to Monterey, California, from the Naval Academy in Annapolis, Maryland. Two years later, after moving 500 students and 100 faculty members, NPS was up and running again, offering graduate level education to military officers and defense personnel in its new Monterey location (NPS 2016).

The Graduate School of Engineering and Applied Sciences (GSEAS) was the primary foundation of NPS. GSEAS remains one of the four official schools that comprise NPS to this day. The GSEAS school mission, also unchanged, focuses on science and technology to increase the technical capability of the Navy and U.S. military forces (Naval Postgraduate School GSEAS 2016). With its move to Monterey, NPS expanded to include the first Operations Research curriculum, the founding basis of the Graduate School of Operational and Applied Sciences (Naval Postgraduate School GSOIS [NPS GSOIS] 2016). The GSOIS focuses on operations and supports the military in a changing, information intensive environment (NPS GSOIS 2016).

Five years later NPS instituted its first Management curriculum, the foundation of today's Graduate School of Business and Public Policy (Naval Postgraduate School GSBPP [NPS GSBPP] 2016). The GSBPP provides an education in public policy with a defense focus to enrolled U.S. military officers and defense civilians (NPS GSBPP 2016). NPS continued its growth in 1972 by creating the first National Security curriculum: this curriculum helped launch the School of International Graduate Studies (Naval Postgraduate School SIGS 2016). The SIGS focuses on international relations and regional security to meet the nation's complex security needs (Naval Postgraduate School Office of Institutional Research [NPS OIR] 2006).

The Education Study Committee in 1973 advised NPS “to determine the role of graduate education in preparing Naval officers for the future” (quoted in Miller 2012, 8). In response, NPS established the NPS Continuing Education Office in 1974 Miller (2012) reports, shortly after, NPS launched a group distance learning (DL) education correspondence courses. The 1989 NPS catalog states the Continuing Education office was to become a “means of providing extended educational services that will more comprehensively fulfill the school’s assigned mission” (quoted in Miller 2012, 8). Due to the office’s strong emphasis on preparatory refresher courses in an attempt to increase students’ entry requirement APC scores, program completion rates were less than 5% and sadly the office was closed in 1989 (Miller 2012).

The department of aeronautics, with a new reinvigorated perspective, offered its first graduate level DL course in 1990 (Miller 2012). This effort was somewhat more successful with 13% course completion rates according to a memo written by Professor Ball in 1993, which was reported by Miller (2012). This course established the evolution of DL at NPS. Owen (2003) affirms shortly following the mild success of this course, an unidentified but enthusiastic thesis student studied how video-teleconferencing technology (VTE) might support DL education at NPS. He found that not only did NPS have professors with the knowledge required to set up a VTE system, but more importantly it was cost effective.

Two experts on campus, one a department chair and the other a dean, set out to change the history of DL at NPS by beginning their search for video-conferencing technologies that would recreate a resident classroom for students off-site (Miller 2012). By the end of the academic year in 1994, Miller (2012) notes they had engineered and built two VTE classrooms on campus, recreating the on-site resident classroom for off-site DL students, these professors’ work set the course for the first DL Masters of Science in Aeronautical Engineering. Two years later, a MS in Software Engineering via the Department of Computer Science began enrolling students. Both programs were officially published in the 1998 NPS Academic Catalog (Miller 2012).

In an effort to improve quality and access, NPS needed to advance and expand beyond the physical constraints of its Monterey resident campus. In 1999, through the

GSBPP schoolhouse, the first of several online degree programs were offered to U.S. military and defense civilians (NPS OIR 2006). The GSOIS and GSEAS schoolhouses soon followed suit, offering degree programs to DL students in 2000, in addition to an expansion of degree program offerings from GSBPP in the same year (Naval Postgraduate School Office of the Registrar [NPS OR] 2016). This expansion continued across the four schools over the years, increasing the Navy's potential reach for workforce development, and for incentivizing officers with additional educational benefits. Further, online degree programs enhance NPS's ability to provide graduate education to U.S. military officers unbound by geographic limitations to better meet the ever changing needs of the mission.

Each NPS school's curriculum was developed chronologically to meet the evolving mission needs of the Navy and U.S. military. Not until 2001 did the four schools become officially established as the Graduate School of Engineering and Applied Sciences, the Graduate School of Operational and Applies Sciences, the Graduate School of Business and Public Policy, and the School of International Graduate Studies (NPS OIR 2006). The GSBPP still provides the only MBA program specifically designed to offer a defense-focused, graduate-level education in business (NPS GSBPP 2016). The first NPS Masters of Science in Management (MSM) degree had been awarded in 1960; however, in 2002 most resident MSM degree programs were changed to MBA programs upon the establishment of the GSBPP (Coughlan, Hager, and King 2013).

Each NPS MBA degree program has three component parts, two of which share a common set of core courses that are standardized across all the GSBPP degree programs. The two shared components are the Defense Management Core (52 credit hours) and a capstone project or thesis. The third component differs for each degree program, and is comprised of a specialized Curricular Concentration (24 or more credit hours). The GSBPP offers five distinct resident MBA programs, each with its own specialized component: Acquisition Management (815/816), Defense Management (809/818/820), Financial Management (834/835), Information Management (870), or Logistics Management (814/819/827).

Each GSBPP MBA program has an overarching, independent educational objective, with its curriculum designed to meet that objective and fulfill Navy mission needs. The MBA programs achieve their respective objectives by tailoring each curriculum to meet the educational requirements of specific Military subspecialties, and Military occupational and functional areas (NPS GSBPP 2016). The MBA programs focus their management education on U.S. military relevance, while interchangeably fulfilling accreditation standards. NPS GSBPP (2016) programs are accredited by the Western Association of Schools and Colleges (WASC) and two additional premier accrediting bodies, the Association to Advance Collegiate Schools of Business (AACSB) and the National Association of Schools of Public Affairs and Administration (NASPAA). This accreditation standard is met only by a handful of graduate business schools in the U.S. and international higher education, (NPS GSBPP 2016).

In addition to its MBA programs, NPS offers a resident Master of Science in Management program in two specialized components, Manpower Systems Analysis (847) and Defense Systems Analysis (817). In January of 2000, the school added two new DL degree programs to enroll on a part-time basis. One of those programs, the Master of Science in Program Management (MSPM) degree program (835), was designed and implemented to give students tools to manage programs and projects efficiently and effectively. Also in January 2000, a second DL degree program, the Master of Science in Contract Management degree program (MSCM) (836), was constructed to equip students with the knowledge required to effectively manage complex acquisitions and contracts (NPS GSBPP 2016).

In June 2002, following in the footsteps of the MSPM DL degree programs, NPS created its first executive MBA DL degree program for Naval officers (NPS GSBPP 2016). This program allowed naval students stationed in the U.S. or deployed at sea to obtain an executive MBA without geographical restriction. Seven years later, NPS launched a second executive MBA DL degree program designed for Department of the Navy (DON) civilians. These two programs were designed to merge the experience of Navy officers and DON civilians with general management and MBA core coursework (NPS GSBPP 2016). In total, GSBPP provides nine Master degree programs

encompassing 18 active curricula that share a core group of courses relating to the practice of public management. Within GSBPP, there are a total of seven resident MBA specialized degree programs, and two DL EMBA programs.

B. NPS COURSE DELIVERY MODES

From AY2006-AY2013, the Naval Postgraduate School offered several course delivery modes. In the face-to-face format, only one course delivery mode was offered for resident degree programs. By contrast, several different course delivery modes were made available for DL program students. Some of these delivery modes have been retired, but those still active include DL-Asynchronous, DL-Synchronous, Hybrid and Offsite. Each of these is discussed further in the following paragraphs.

All Naval Postgraduate School students, whether resident or DL students, have access to NPS's open source learning management system, called Sakai. This online collaborative learning and research portal offers flexibility for students and faculty. Sakai can provide a course syllabus, homework assignments, access to assigned readings, discussion board capabilities that track and notify the posting of comments, video lectures, and timed quizzes and tests. These and other Sakai features may be used by faculty to facilitate better understanding of course requirements and more opportunities to meet course objectives for both resident and DL students. This portal also provides an online means by which instructors can provide resident students with both required and supplementary course materials.

DL-Asynchronous courses are taught with materials, lectures, exams and other resources available via Sakai and other online platforms for lectures. Students in asynchronous courses can access Sakai at any time convenient for their schedule. Sakai thus provides one of the platforms that DL students must access to participate in classes. This portal contains, at a minimum, access to course materials, exams, other resources, and potentially lectures. Other online platforms NPS uses for lectures include Elluminate, a web-based software, and video teleconferencing (VTE), both of which are available through NPS on-campus classroom connections to off-site classrooms.

DL-Synchronous online classes require students and instructors to be online at the same time to participate. That is, the lectures, discussions, and presentations occur at a specific hour, just as in a face-to-face course format. VTE and Elluminate are used to provide support to this off-site resident classroom experience. As shown by the NPS Student Management Database and distance learning reports, all MBA courses are video streamed using VTE technology (Naval Postgraduate School Office of Institutional Research [NPS OIR] 2016). The hybrid courses are taught partially online and partially in face-to-face meetings on the NPS campus. Offsite courses, however, are taught face-to-face at locations other than the NPS campus. All instruction for resident courses, by contrast, takes place face-to-face within NPS classrooms.

Concurrently with the evolution of computer assisted programs at NPS, public and private higher education institutions also began with online course delivery modes, including one NPS-MIT partnership (Miller 2012).As the use of online platforms became wide spread, efforts to assess effectiveness and compare their outcomes with those of traditional resident programs were undertaken. In response to such accessible online learning sites such as the Kahn academy, reports and entire journals were devoted to DL education were common.

III. LITERATURE REVIEW: STUDENT SUCCESS IN NPS RESIDENT AND DL MBA PROGRAMS

This chapter provides an overview of academic research on the advantages and drawbacks reported for resident and distance learning (DL) programs in the literature. It also reports on literature findings for assessing DL programs and students, as well as the assessment of MBA students in DL programs, and comparisons of resident and DL student success.

A. HISTORY OF EARLY DISTANCE LEARNING AND THE POTENTIAL FOR EDUCATING MILITARY AND DEFENSE PERSONNEL

Although distance learning (DL) is commonly considered to be the product of 20th century computer technologies applied to a range of instructional objectives, scholars report that it has been attempted with every technological advance since the invention of the printing press (Frick 1991). According to Harting and Erthel (2005), for example, the first instance of DL education in the United States was offered almost three hundred years ago in the form of correspondence, designed to help students to master new technologies. To attract students to this DL opportunity, the instructor used the mail and, in March 1728, a Boston newspaper to advertise courses in shorthand (Holmberg 1995, Harting and Erthel 2005).

The first correspondence school, The Society to Encourage Studies at Home, was established in the 1800s by a woman, Ana Eliot Ticknor (Harting and Erthel 2005). This enterprising teacher and entrepreneur provided classes in over 20 different subjects. Her students were primarily young women who had duties at home, as was typical of the time period (Harting and Erthel 2005). The next offering of a correspondence program came about through the Chautauqua movement, a byproduct of the Lyceum movement, both of which provided specific formats for forums aimed at adult education. As a supplement to the Chautauqua forums, which commenced shortly after the Civil War, home-study courses were provided, as well as a home-study certificate program spanning four years (Harting and Erthel 2005).

In 1870, Illinois Wesleyan University became the first university in the United States to begin a DL correspondence, home-study program (Harting and Erthel 2005). Two years later, the first president of the University of Chicago brought to this institution the correspondence program he had originated at the NY Chautauqua (Harting and Erthel 2005). Shortly thereafter, in 1883, the first correspondence university was launched in Ithaca, New York. By 1892, Penn State had developed a correspondence program as well (Banas and Emory 1998). All these early DL programs for higher education were established on the premise of offering "educational opportunities to students who were unable to participate in traditional, full-time residency programs" (Banas and Emory 1998, 366).

According to Kentor (2015), in the early 1900s radio broadcasting made courses accessible via radio waves. The University of Wisconsin benefited from this new technology, offering a handful of courses for credit (Kentor 2015). In the 1930s, the University of Iowa was the first pioneer of television broadcast for education; three more universities followed in its footsteps, including the University of Michigan (Kentor 2015). By the end of World War II, moreover, universities were beginning to offer courses for credit that were televised. Miller (2012) reports that Coastline Community College, the first U.S. virtual community college, began its operation by using "tele courses" in 1976, well before widespread access to the Internet was available to civilians.

The 1980s brought about the first management programs and online accredited graduate degrees (Miller 2012). Moreover, the early expansion of Internet technology over the 1990s evolved to provide both real time in sync, synchronous instruction, and out of sync, asynchronous instruction modes for courses, with a corresponding increase in the number of DL programs offered by universities nationwide (Miller 2012). Further, by the mid 1990s, the first fully web-based accredited university was established, paving the way for accredited DL programs in the 21st century.

The Internet and technology boom of the early 21st century provided an opportunity for all universities to diversify and grow their DL degree programs. In the late 1990s, content management systems emerged and the digital universe expanded. Online teaching and learning began to be as easy to access as the World Wide Web

(WWW). New approaches to DL platform applications were rapidly developed, from Blackboard LMS in 1997, to the Kahn Academy in 2006, followed by YouTube EDU free lectures in 2009 and MOOC platforms like edX, used by Ivy League and other world renowned technology schools (Kaplan and Haenlein 2016).

Technology that permits classes in real time or at reliable intervals, offers particularly important opportunities for military and defense personnel. As Banas and Emory (1998) observed, "For the military experiencing budget constraints…having to do more with fewer resources…the old model of sending people to centralized education facilities for extended periods of time makes rapid deployment difficult" (Banas and Emory 1998, 370–371). As organizations were created to promote the use of DL within the Federal government in the late 1990s, the military joined in and began its own consideration of DL education (Banas and Emory 1998). By making use of the communications systems vital to their other operations, the military was well positioned to offer cost-effective educational incentives to military and defense personnel (Banas and Emory 1998).

Taken together these studies suggest that, many educators have contributed to the development of DL across the nation's history, however, despite such enthusiasm for the potential benefits that DL programs provide, their quality has always been questioned, allowing resident education to remain the standard. The broad access provided by online DL programs has especially prompted concerns about DL student outcomes as compared with those of students receiving a resident education. To address these questions, researchers have suggested the need to identify factors that may differently affect resident and DL students.

Meanwhile, outcome measures for student success and program quality continue to be based on factors traditionally reported in the transcripts of resident students enrolled in accredited programs. That is, measures developed resident students are applied and used to assess differences between resident and DL student achievement in most reports. This MBA project research makes use of these same measurements, but also includes program-specific comments from resident as well DL NPS MBA students.

B. IMPACT OF COURSE INSTRUCTION MODES ON STUDENT SUCCESS IN RESIDENT AND DL MBA PROGRAMS

A number of reports examine the different modes available for course instruction in resident and distance learning (DL) MBA programs. These DL modes, which include asynchronous, synchronous and hybrid approaches, may each introduce factors playing an important role in student and program success. Terry (2007) describes resident courses as those courses instructed in person, face-to-face, and at a specific time and place on a traditional campus. For a 3-unit class, a total of 45 hours of face-to-face instruction typically takes place. By contrast, DL asynchronous (self-paced) and synchronous (paced) modes of instruction are described as approaches in which course instruction does not occur on a campus any longer, but instead converts the campus classroom into a virtual one (Terry 2007). Terry (2007) further emphasizes the potential to support student and faculty communication offered by a hybrid approach, which in his opinion combines the best attributes of both resident and DL courses. According to Terry (2007, 21), the hybrid approach is characterized by "approximately 18 to 25 hours of student and faculty interaction associated with a 3 unit course" occurring in face-to-face sessions. For the remainder of the course, course communications for the remainder of the course are substituted by online interaction and a virtual platform to access course materials (Terry 2007).

Many studies that examine overall outcomes for DL online programs, hybrid programs, and resident programs report course and program findings differentiated by instruction modes. Importantly, studies assessing student outcomes for DL MBA programs have reported that different modes of DL course delivery may present very specific challenges (Stephens 2007). Some of these challenges include the inability to verify academic integrity, decreased student engagement, and students feeling more isolated due to fewer opportunities for networking and connecting with peers (Ni 2013).

According to Ni (2013), feelings of isolation and reduced connections can arise with DL modes of instruction, particularly asynchronous modes. This finding is of note as experiences in collaboration and group practices that best support it are extremely important for military students (Gratton and Erickson 2007). Programs designed for these

students should therefore consider that the development of networks and connections for comradery and team building, core values of the military, may prove more difficult when students are stationed in different places and their only connection is online. To assist in better program design, studies of military and defense personnel student outcomes that are achieved through various DL modes of instruction should be conducted to help develop approaches better supporting core team values.

The challenges of the virtual environment can also be important for business students, especially since real world business professional environments they hope to join are built around communications that support collaboration to meet organizational goals (Gratton and Erickson 2007). Group projects, for example, form a major component of all MBA programs, but participating in such groups in an online environment poses an increased challenge. On the other hand, these challenges likely reflect interactions that will occur after graduation in current, online business environments, which place an increasing emphasis on collaboration (Gratton and Erickson 2007).

Kearns (2012) states that synchronous DL environments can both provide numerous benefits and eliminate some of the problems reported for asynchronous DL environments, especially those barriers arising from being out of sync. A synchronous class eliminates time delays in communications between students and professors, as well as bringing the classroom into the home or off-site classroom. These advantages, which increase opportunities for shared experiences among DL students, can help students develop connections among peers and with faculty. According to Ni (2013), such connections may reduce student feelings mentioned of isolation and frustration within the asynchronous environment.

Quintanar (2012) believes that studies comparing resident and DL education often find the quantity of communicative interactions in DL to be far less important than their quality. Quintanar (2012) also comments that whether by synchronous or asynchronous means, “the learning process is developed through the interaction and exchange of ideas in computer-assisted communication” (147). A number of researchers, sharing this view, proceeded to examine a range of factors contributing to quality DL instruction, including instructor opinions on and contributions to the quality of DL education (Quintanar 2012) .

According to Bentley, Shegunshi, and Scannell (2010) and Harmon, Alpert, and Lambrinos (2014), hybrid modes of instruction provide the benefits of both resident and DL modes. These modes allow the communication and connections of resident programs, but greatly reduce the face-to-face time required, allowing full time professionals to better manage the time needed for their courses. They also provide the benefits of online access for discussions after a lecture, homework submission and exams, without eliminating opportunities for connections (Ni 2013). For the sample of graduate students studied by Harmon, Alpert, and Lambrinos (2014), hybridization of courses and programs counterbalance the shortcomings of resident and DL instruction.

As Internet-based DL became an accepted mode of instruction, discussion of student performance and appropriate performance measures for DL program success began to be debated by program faculty, administrators, researchers and accreditation organizations. Comments in early 21st century reports began to suggest that many factors might specifically affect student outcomes in courses delivered solely or largely by computer-assisted technologies (Terry 2007). Decreased personal interaction, part-time student status, the demands on working students, and other obstacles have been mentioned as potentially more influential for DL than for resident students (Terry 2007). Nevertheless, most assessment measures of DL student and program success were transferred directly from evaluation approaches developed for measuring resident student success in traditional programs.

The technological advances of the 1990s motivated educators to develop the synchronous and asynchronous communication approaches for DL education made possible through computers (Kumari 2001). Synchronous communication can be used to provide instruction, such as instructors giving lectures “in sync” i.e., in real time, with students in different areas using their computers to attend class together despite in some case being in different locations (Kearns 2012). Asynchronous communication provides instruction “out of sync,” with the instructor, for example, providing materials or pre-recording a lecture that students can access at their convenience (Kearns 2012). Together, these communication approaches provided the foundation on which DL programs were based.

C. PERFORMANCE MEASURES USED TO EXAMINE STUDENT ACHIEVEMENT IN RESIDENT AND DL MBA PROGRAMS

The computer environment for DL education, and the students and faculty willing to test its potential, changed more rapidly than assessment studies could keep up with (Wilkes, Simon, and Brooks 2006). For example, evaluations of distance learning (DL) course content relied primarily on 1990s assessment concepts, developed before DL education was well known (Miller 2012). The following summary thus provides a chronological account of research on DL versus resident education assessment, and the performance measures primarily used for these assessments.

Program assessments that relied on traditional measures include, among many others, those by Navarro and Shoemaker (1999), Anstine and Skidmore (2005), and Carrol and Burke (2010). These researchers all evaluate exam scores. Anstine and Skidmore (2005) averaged student test scores for identical courses with identical instructors, and report that online students in the MBA statistics courses they evaluated had lower exam scores than resident students. Although, they found that DL students perform worse than resident students for statistics, they found no difference between these groups for the managerial courses (Anstine and Skidmore 2005). One explanation for the different outcomes observed between statistics and management courses could be differential DL and resident student exposure to professional managerial operations and responsibilities, a factor not addressed in the report.

Anstine and Skidmore (2005) results aligned with current beliefs about DL courses at the time. However, online platforms for DL were rapidly improving in user functionality, overall efficiency, and program design across the period of their study. For example, only two years after the Anstine and Skidmore (2005) report, another study suggested that hybrid programs yielded higher student grades, higher course evaluation scores and higher student retention than did strictly online distance programs (Terry 2007). This shift in point of view expressed by these researchers anticipates the far reaching impact of technological advances on DL education.

The year following the Anstine and Skidmore (2005) report, an assessment of the perceptions of DL programs was published by Wilkes, Simon, and Brooks (2006). Using

survey research, these investigators evaluated faculty and student perceptions of online courses and programs (Wilkes, Simon, and Brooks 2006). Their findings show that a larger percentage of faculty surveyed, as compared to students, held a much more negative view of online courses. This finding raised concern that "negative faculty attitudes towards online programs could hinder efforts to successfully deliver quality programs" (Wilkes, Simon, and Brooks 2006, 137).

However, in his comparison of resident and DL students' outcomes, Terry (2007) suggests that a reduction in the quality of instruction in DL education could be a direct by-product of decreased personal interaction. Terry (2007) evaluated course grades, faculty evaluations, course evaluations, and project grades. For all these measures, Terry (2007) finds both resident and hybrid students received higher marks than students whose programs were entirely conducted by computer-assisted technologies. Terry's (2007) findings support the view that opportunities for face-to-face course communication are important for student achievement and its evaluation. Of note, these opportunities may be particularly important for students in hierarchical organizations that depend on effective communications, such as the military.

Gibson (2008), who also used exam scores to measure learning outcomes at the course level specifically for MBA students, similarly finds that resident students scored more than 3 percentage points higher on exams than online students in the same course. In the following year, Larson and Sung (2009) likewise used course and exam grades as their outcome measures, but found student success in their cohorts to be similar for both online and resident students. These researchers evaluated the grades of non-MBA students enrolled in a Management Information Systems course, finding no statistically significant difference between the course grades of the resident, DL, and hybrid modes of instruction (Larson and Sung 2009). It is not clear if the different findings reported in these studies may have resulted from differences in available technology, greater DL program experience, differences in student experience with computer interfaces, or the measures and cohorts evaluated.

A study by Bruce (2010) evaluated responses to a graduating MBA student survey that addressed students' satisfaction with their program as a measure of success. Bruce

(2010) observes that online students rated the quality of their learning experience as higher than average. In contrast, resident students reported higher satisfaction than their online peers in such areas as curriculum, program management, and faculty. That same year, Bentley, Shegunshi, and Scannell (2010) also used survey questions to study students' satisfaction with a hybridized MBA program. This research group states that students in hybrid DL programs report higher satisfaction with their programs and attribute their positive experience to hybridization.

Christensen and Nance (2012) compare undergraduate and graduate grade point averages, in addition to prerequisite courses, as measures of preparedness for MBA coursework and as influences on student success. They report that undergraduate and graduate GPAs are correlated and suggest that these GPAs are a predictor of student success in an MBA program. They also report that prerequisite courses did not correlate with student success, and should not be used as a predictor.

Ni (2013) examined course grades and assessed learning objectives. In contrast with studies suggesting analogous student success for resident and DL students (Navarro and Shoemaker 1999, Larson and Sung 2009, and Carrol and Burke 2010), Ni (2013) found that research and math based courses are slightly more challenging in an online environment. Ni (2013) found that DL students receive lower grades for such courses than their resident counterparts. This finding supports Anstine and Skidmore's (2005) observations of statistics courses. However, Ni (2013) also states that online more than resident students, report finding their instructors effective in teaching critical thinking and writing course objectives. Ni (2013) suggests that these attitudes appear to lead to higher success rates for online students.

Ni (2013) supports the argument that resident student outcomes are generally higher than those of online students at the same course level. Her assessment of student failure rates found a 6% higher failure rate for DL versus resident students. Ni (2013) then correlated course failure rates to student attrition rates, and found that DL students have higher attrition rates than their resident counterparts.

However, Harmon, Alpert, and Lambrinos (2014), in an evaluation of course level exam grades for a MBA Principles of Economics class, confirm results reported earlier by Navarro and Shoemaker (1999), Larson and Sung (2009), and Carrol and Burke (2010). These researchers all find student success to be equal, regardless of the mode of instruction. In contrast, some studies of MBA programs find that DL student success is equal to that of resident students. Harmon, Alpert, and Lambrinos (2014) also point out that Carrol and Burke (2010) and Navarro and Shoemaker (1999) studies do not correct for course self-selection bias. Harmon, Alpert, and Lambrinos (2014) state that they observed no noticeable differences in student success in their sample, and that the DL mode of instruction did not affect student outcomes.

In addition, Harmon, Alpert, and Lambrinos (2014) report that online MBA students found it more valuable to watch and listen to lectures repeatedly, as their schedule allowed, than to attend a single lecture in a resident course. The students appreciated DL opportunities to review material and pause lectures as needed. Their views were supported by another report that year on resident students, who saw being unable to utilize a variety of learning formats as a disadvantage (Harmon, Alpert, and Lambrinos 2014). However, Harmon, Alpert, and Lambrinos (2014), who focused on student success at the course level, also report that resident students scored more than ten percentage points higher on exams than online students enrolled in the same MBA statistics course, supporting the findings of Anstine and Skidmore (2005) and Ni (2013) for math-intensive courses.

Ni's findings on a higher attrition rate for DL students were recently supported by Fodor (2016) in a study evaluating NPS students across all programs. According to Fodor (2016), different results are observed when comparing the success of resident and DL students across all NPS programs, as compared with only GSBPP programs. When considering students across all NPS programs, DL students do not perform as well as their resident counterparts, and are more likely to leave the program without graduating. However, when analyzing only GSBPP students, Fodor (2016) finds that DL students perform equally as well as resident students.

Bacolod and Chaudhary (2016) examine students enrolled across all NPS programs. They find a significant negative DL impact on graduation status, with DL students 15% less likely to graduate than their resident peers (Bacolod and Chaudhary 2016). They also report a significant 0.38 lower grade point average for DL versus resident students across all NPS programs (Bacolod and Chaudhary 2016).

In many respects, the findings of all these researchers suggest the continued importance of observations in a 2000 report on the community of inquiry model by Garrison, Anderson, and Archer (2000). These early DL education researchers claim, "effective online teaching in an MBA program is simply a function of three types of presence: social, cognitive, and teaching (Arbaugh and Hwang 2005, A1)." Arguing that online learning can be just as effective as resident learning, these researchers emphasize the instructor's role in developing a collaborative classroom presence in a computer assisted course. These researchers define social presence in the online environment as "the ability of learners to represent themselves socially and emotionally as 'real people'" (Garrison, Anderson, and Archer 2000, 89). Cognitive presence is developed, these researchers Garrison, Anderson, and Archer (2000) suggest, by equipping learners to "sustain reflection and discourse with peers" (89). thus allowing them to build and confirm new insights. Teaching presence is defined by Garrison, Anderson, and Archer (2000) as the "design, facilitation, and direction of students' cognitive and social processes," so as to enhance the classes' ability to realize meaningful and educational worthwhile learning outcomes (89). With these three "presences," a learning environment equitable to that of resident environments can be created by DL instructors.

One important advance since this early report, has been the advent of hybrid DL delivery programs. This approach takes steps toward advancing the "presences" for successful learning described by Garrison, Anderson, and Archer (2000), and may help in more insightfully evaluating their impact in the DL environment.

D. ARTICLES ON HYBRID DELIVERY OF EDUCATION

A new concept for MBA programs provides students with a hybrid of resident and DL instruction. These programs address many challenges that arise from concerns posed

by accrediting bodies. For example, the revised standards of the Association to Advance Collegiate Schools of Business International (AACSB) require “that programs ensure students’ efforts in a program are ‘equivalent in terms of depth and rigor’ across all delivery modes” (Association to Advance Collegiate Schools of Business International [AACSB] 2015, 34). Offering a brief resident experience within the MBA program provides benefits to students that allow the program to address important AACSB the concerns. According to Christ, Arsenault, and Gault (2015, 32), accrediting bodies challenge DL MBA programs on “assessment, institutional engagement and adequately addressing important business issues such as innovation.” As these researchers point out, such challenges have resulted in many programs requiring students to attend brief resident portions of their programs.

As stated earlier in this review of the literature, Terry (2007) strongly argues that hybrid programs provide the most positive qualities of resident and DL modes of instruction, offering students the best of both worlds. DL students who have an opportunity to interact face-to-face with faculty and peers can better cultivate a sense of community. With this learning community established, the use of DL modules in place of class time offers a better balance between studies, work, and personal commitments for busy professionals.

Christ, Arsenault, and Gault (2015) report on studies conducted of “all 133 AACSB accredited universities that provide a DL MBA program. Of those 133 universities, 30 required a resident experience, making them partial hybrid programs” (33). According to Christ, Arsenault, and Gault (2015), hybridization provides opportunities for the direct assessment of a program, with a small resident portion useful in addressing many areas of concern examined by accrediting bodies. For example, the hybrid programs can address one AACSB concern by structuring part of their resident programming around a current, significant business issue. An added benefit of the resident portion of a hybrid program is that it increases institutional engagement (Christ, Arsenault, and Gault 2015).

These resident sessions can take place over a weekend, or even through a three to five day short course, permitting students who have full time jobs to attend a resident

session without disrupting their careers. Recent research further suggests that the resident portion of a hybrid program creates a face-to-face connection between the students that can help eliminate feelings of isolation, potentially reducing the student stress reported by Ni (2013) that can occur in DL programs.

E. BENEFITS AND COSTS OF DL

Both tangible and intangible costs are associated with distance learning (DL). Not surprisingly, student assessment is a highly debatable tangible cost. According to Kearns (2012), DL MBA programs have difficulty in evaluating student outcomes beyond grades. Asynchronous modes of instruction can further increase the level of difficulty in evaluating student outcomes. As students are not in sync with the professor, delayed feedback can occur. Similarly, in the case of any technological problems, such as a computer breaking down, students may not be able to access their professors' feedback at all (Kearns 2012).

Nonetheless, the intangible benefits of DL MBA programs cited in the literature include successfully eliminating barriers, including but not limited to time and scheduling constraints, as well as public speaking anxiety (Ni 2013). Ni (2013) also quotes Hackbarth (1997) and others in her research, commenting on the convenience of the DL mode of instruction for busy working professionals with full time positions. One benefit DL instruction can provide is an accommodating schedule, flexible in nature, potentially permitting a better school, work and life balance for these students. Another benefit of DL instruction modes is the lessening of in-person communication barriers. DL modes of instruction can make discourse more feasible, allowing a timid student to share an opinion. Ni (2013) reasons that online courage can make it possible for a student who might never speak up in a classroom to gain confidence in public speaking through a DL learning environment. Ni (2013) also points out the research of Warschauer (2005), who found online communications reduce pressure for timid students by providing the time they need to process and articulate opinions, increasing students' desire to participate in discussions and hence their participation in the virtual classroom.

In an earlier list of DL mode of instruction benefits, Terry (2007) mentions the aesthetic value of a consistent interface, along with a program's ability to reach students around the world, reductions in time spent commuting to and from school, and sometimes the overall reduced cost of receiving a DL education as opposed to a resident education.

Many researchers note the many benefits of DL instruction for those who are business professionals and those who have difficulty with face-to-face communication and interaction. However, findings by Harmon, Alpert, and Lambrinos (2014) agreed with Kearns' (2012) view that drawbacks also exist. In both of these studies, samples of graduate students reported that the largest drawback to being in an asynchronous DL course was not being able to receive an immediate response to a question from an instructor during lecture (Harmon, Alpert, and Lambrinos 2014; Kearns 2012). These researchers' findings support the view that barriers to a real time exchange of information can make a concept more difficult to understand.

Ni (2013) suggests other negative outcomes of a delayed communication between faculty and students in DL instruction. These may include increased feelings of isolation, confusion and frustration, unverifiable academic integrity and decreased student engagement (Ni 2013). Ni's (2013) concerns were not new. Ware (2005) expressed some of the same views, and Terry (2007) references a 1998 report by McCormack and Jones (1998), which comments on the costs of constrained communication in the online classroom.

According to Terry, research since the late 20th century has suggested that the cost of DL instruction can include such factors as hardware and software constraints, instructors' opposition to moving towards new and different instruction models and approaches, and difficulties in gauging a student's critical thinking skills (Terry 2007).

Many of the details associated with these factors have changed with advancing technology and increasing student and faculty competence in the online environment. However, until more accurate measures of program, course and student outcomes have been developed for the DL educational environment, innovations able to support its benefits and minimize its cost will be difficult to create, introduce and evaluate.

F. RELEVANT ARTICLES

The following articles and their research contributed important approaches, findings, and interpretations of data to this project's evaluation of student success factors. Terry (2007) researches resident and DL MBA student success, including the success of hybrid students. Terry (2007) uses multiple measures and finds that DL student grades, course evaluations and other areas are lower than those of resident and hybrid students. However, in some areas, such as student assignments focusing on business applications and teambuilding, Terry suggests that there is no difference in these three instructional modes and that they are equitable (2007). Terry's approach uses multiple measures, each adjusted against differences in means by use of the Kruskal-Wallis test, and so provides a model for increasing the validity of data results and conclusions.

Ni (2013) evaluates course grades and survey responses to determine learning effectiveness. Ni also finds when evaluating learning outcomes, the resident students feel less positive about the effectiveness of their learning outcomes than their DL peers. Ni is also careful to consider how further analysis of the data might help explain differences in resident and DL outcomes. This is seen in her examination of higher failure rates for DL students, which she determines is related to these students' higher attrition rates (Ni 2013). She also suggests factors needing further analysis that are particular to the online environment, such as the opportunity it provides timid students to participate in discussions. Ni's (2013) report provides an important example of both evaluating data and interpreting it carefully in light of other findings.

Fodor (2016) focuses on resident and DL NPS students across all programs for the same start academic years of this MBA project, 2006 through 2013. Part of his thesis evaluates student academic success data by using propensity score matching. This measure is different from other literature measures proposed, with the exception of a study conducted by two NPS professors (Bacolod and Chaudhary 2016). Fodor's (2016) examination of academic success factors focuses on entry requirements (APC), overall NPS GPA (TQPR), and student graduation status. Fodor (2016) finds when observing NPS students across all programs that most DL students do not perform as well as their resident counterparts by any of the academic success factors evaluated. The exception

noted is for GSPPB DL students. Fodor's findings may differ from those of this MBA project, as the population evaluated here consists only of NPS MBA students, but we each evaluate in some form, entry requirements (APC), grade point averages (QPR), and graduation status.

Bacolod and Chaudhary (2016), the NPS professors report similar results to those of Fodor (2016). They too evaluated all NPS students during the same academic year time frame, and used propensity score matching methods to assess student success in resident and DL programs (Bacolod and Chaudhary 2016). Their study also focused more deeply on differences seen by examining instructional mode and demographics. One part of Bacolod and Chaudhary's (2016) work examines, for NPS DL students across all programs, the academic success factors of grade point average, graduation status, and number of thesis extensions. From this examination, these researchers suggest that DL students across all NPS programs perform at a lower level than their resident peers and are more likely to request a thesis extension (Bacolod and Chaudhary 2016).

All these articles present important data that can contribute to better assessments of DL MBA courses and programs. The articles that evaluate more than one student success measure seem to offer the least bias and most validity, and influenced my decision to evaluate more than one outcome. Articles that evaluated more than one mode of instruction were most relevant to post-secondary education and the future of instructional delivery. In addition, I found the articles supporting hybrid modes of instruction to be of great theoretical interest. This body of research suggests that these programs offer the best of both resident and DL instruction can potentially eliminate issues currently hindering student success in both DL and resident modes standing alone.

While findings in much of the literature on DL programs are mixed, they generally show that resident MBA students perform as well or better than DL students at both the course and program levels. In particular students in the DL programs appear to be at a disadvantage in their math intensive courses, which weighs down their academic performance.

The metrics of student success most commonly used in the studies examined for this review of the literature include exam grades and course grades. The analyses performed for this MBA project research will not include course-level examination scores as this data is unavailable, but they will examine an additional, unique measure: student responses to the NPS Graduating Student Survey questions pertaining to student satisfaction, engagement, and program preparation.

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IV. STUDENT ACADEMIC SUCCESS AND EXPERIENCE FACTORS

These analyses are preliminary investigations intended to identify areas deserving further examination by NPS MBA program faculty and administrators. Toward this goal, I collected data from the NPS Student Management Database for resident and distance learning (DL) students who began their MBA programs in AY2006 through AY2013. At the time the study began, these years offered the most recent complete data available.

Some of the data analyzed was specifically designed by the NPS Admissions Department in 2008 to better evaluate military and defense student preparedness for the unique emphases of the NPS programs (Susan Dooley, personal communication, 2017). In particular, the NPS APC entry requirements were designed to account for undergraduate grade point average (GPA), mathematics, and any engineering or technical background the student might possess.

Data analyzed also included grade point averages reflecting the students' progress; these data were grouped by grade point average for all NPS courses taken (TQPR), program specific courses (CQPR), and core courses required by all NPS MBA programs (CoreQPR). In addition to these data, student graduation rates (grouped by on-time, graduated and no graduation status) as well as student responses to the Graduating Student Survey (GSS) were collected for analysis. Descriptions of these academic entry requirements, success and experience factors are defined further in this chapter.

A. NPS RESIDENT MBA AND DL EMBA ACADEMIC PROFILE CODE (APC): A THREE-PART EXAMINATION

The NPS Admissions Office initially evaluates a prospective candidate's official undergraduate transcripts to verify their legitimacy as issued by an accredited university. After verification Admissions further evaluates a candidate's eligibility for a program by determining their Academic Profile Code (APC). This three-digit code, according to the NPS OR (2016), must be at least a "345" for the MBA resident degree programs, except for Financial Management, which bears the greatest similarity to the DL EMBA

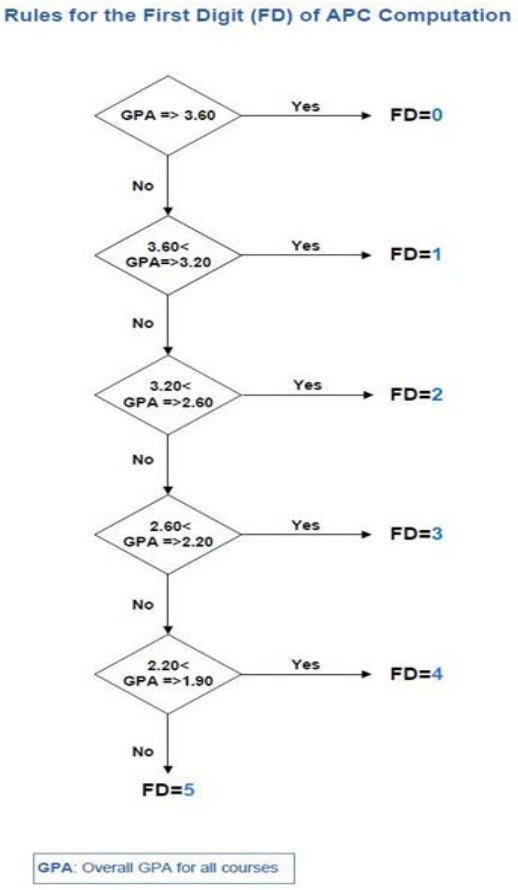
programs, and also requires a “245.” These programs also have the greatest overlap in course requirements.

1. *APC Digit 1:* Undergraduate GPA

According to NPS Admissions Director, Susan Dooley (personal communication, 2017), all undergraduate GPAs are recalculated by Admissions Office staff to include failed and retaken courses. She also reported that the recalculated GPA may differ slightly or significantly from the undergraduate GPAs posted on a student’s transcript. Dooley noted that the recalculated GPA is used to determine the first digit of the APC displayed in Figure 1.

Eligibility for all MBA resident degree programs except Financial Management requires an *APC Digit 1* at least equal to “3” according to the NPS OR (2016). That is, for admission to most MBA resident programs, a prospective student must have a re-calculated minimum undergraduate GPA that is greater than or equal to 2.20 (C+ average). For the resident MBA in Financial Management and the two DL EMBA programs, a re-calculated undergraduate GPA that is a minimum of 2.60 (B- average) is required. This re-calculated GPA, referenced in the NPS OR (2016) Academic Catalog, which yields an *APC Digit 1* that is at least equal to “2,” imposes a stricter eligibility requirement in the form of a higher grade point average threshold for financial management and the two DL programs.

Figure 1. APC Determination of Digit 1.

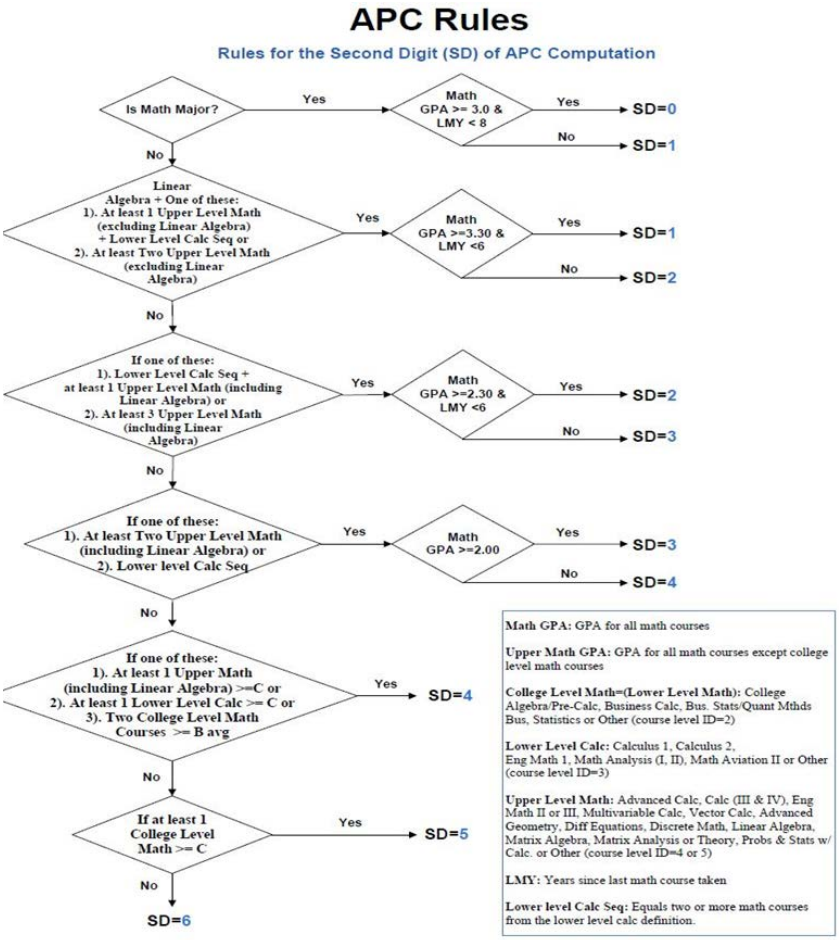


Source: Admissions Office, unpublished data (2014).

2. *APC Digit 2:* Mathematics Background

APC digit 2 is computed from undergraduate Math courses; the required score of "4" is achievable in two ways. A student with a minimum grade of "C" in at least one upper-level Math course, including Linear Algebra, receives a "4." A student with a minimum grade of "C" in at least one lower level Calculus course, or a combined minimum "B" average in at least two college level Math courses also receives a "4." Figure 2 explains computation of *APC digit 2*. The "4" required for *APC Digit 2* is consistent across GSBPP Master's programs except the DL Master of Science in Program Management according to the NPS OR (2016). This latter program requires an *APC Digit 2* of "3," does not confer an MBA, and is here excluded.

Figure 2. APC Determination of Digit 2.

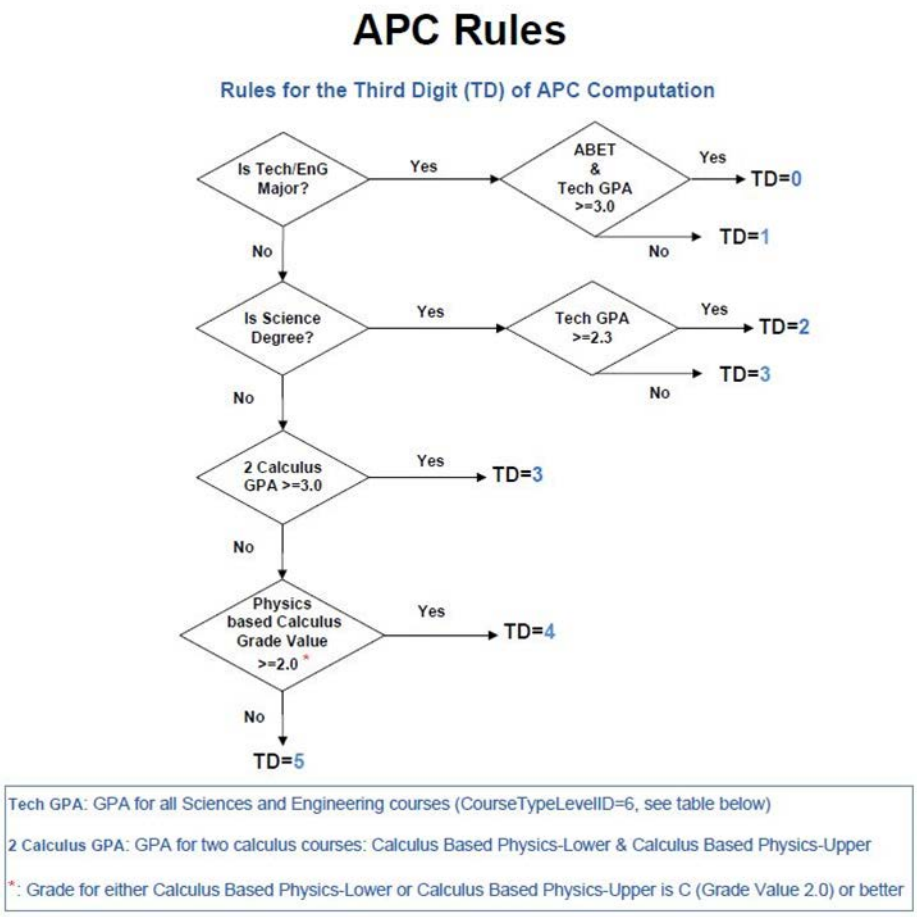


Source: Admissions Office, unpublished data (2014).

3. *APC Digit 3:* Technical/Engineering Background

The third APC digit is computed using the prospective student's prior engagement with a technical, engineering, or physics program. Students with a technical-engineering or physics degree, or with an average grade of "B" for two calculus-based physics courses, receive a discipline-coded digit. All other students are assigned a "5," the minimum third digit entry criteria for all GSBPP resident and DL programs defined in the NPS OR (2016) Academic Catalog. Prospective students who do not meet any of the desired technical, engineering or physics criteria are thus still eligible for admission, explained in detail in Figure 3.

Figure 3. APC Determination of Digit 3.



Source: Admissions Office, unpublished data (2014).

B. MATRICULATING STUDENT SUCCESS MEASURES: TOTAL NPS, MBA PROGRAM AND MBA CORE COURSE GPA AND GRADUATION RATES

Matriculating students' program success is tracked by the NPS Registrar's Office. For this project, student success was assessed by total NPS, program and core course GPA and Graduation Rates. The effort to understand "how one can boost the value of constructing knowledge and learning with 'others' in e-learning" (Quintanar 2012, 150) has produced few conclusive findings on specific factors affecting program and student success. For this reason, data obtained from student transcripts, is analyzed primarily to provide a preliminary means of comparing resident and DL MBA student success across their program experience, as well as at its completion. Importantly, differences between

the resident MBA and DL EMBA vary both by course delivery mode and in the courses required by these programs. Table 1 displays these differences in course requirements for the resident and DL programs.

Table 1. MBA Resident and EMBA DL Core Course Load Comparison.

	MBA Resident Core Courses	Shared MBA Courses with EMBA DL Program
GB1000	Quantitative Skills for Graduate Management Studies	
GB3010	Managing for Organizational Effectiveness	✓
GB3012	Communications for Managers	
GB3014	Ethics for Public Managers	
GB3020	Fundamental of Information Technology	
GB3040	Business Statistics & Data Analysis	
GB3042	Operations Management	✓
GB3050	Financial Reporting and Analysis	✓
GB3051	Cost Management	✓
GB3070	Economics of the Global Defense Environment	✓
GB4014	Strategic Management	
GB4043	Business Modeling Analysis	✓
GB4052	Managerial Finance	✓
GB4053	Defense Budget and Financial Management Policy	✓
GB4071	Economic Analysis & Defense Resource Allocation	
MN3331,	Systems Acquisition and Program Management	
	EMBA DL Core Courses not shared with Resident MBA	
GE3011	Management of Teams	
GE3221	Principles of Acquisition and Program Management II	
GE3222	Principles of Acquisition and Program Management II	
GE4016	Managing Strategic Change	
GE4101	Collaborative Problem Solving 1	
GE4102	Collaborative Problem Solving 2	
GE4480	Defense Supply Chain Management	

Source: NPS Office of the Registrar, unpublished data (2016).MBA Resident programs have several additional curriculum specialized courses. GB3510 defense financial management practice course is not included in this table is shared only by the financial management resident MBA and DL EMBA programs and is not considered a core course. Selection of core courses is based on uniformity, used for calculating a core course GPA (CoreQPR).

To better capture data reflecting the achievement of students in their particular NPS MBA program, as well as data allowing a comparison of student achievement across programs, analyses of three grade point averages were conducted in this MBA project. Two of the grade point averages, TQPR and CQPR, were pre-calculated by the NPS Student Management Database. However, a separate grade point average was calculated based only on student outcomes in the eight course requirements shared by all NPS MBA programs, including Managing for Organizational Effectiveness, Operations Management, Financial Reporting and Analysis, Cost Management, Economics of the Global Defense Environment, Business Modeling Analysis, Managerial Finance, and Defense Budget and Financial Management Policy. Recalculating a CoreQPR grade point

average for these eight courses, which are taken by both resident and DL MBA students, permits comparison of a slightly more extensive and nuanced data sample. However, limits on access to individual student and course data prevented the use of meaningful controls for this portion of the MBA project analysis.

1. GPAs: TQPR, CQPR, CoreQPR

NPS grade point averages were developed to provide an indication of the ability of students to do well in NPS programs. At NPS, an instructor's assessment of a student's success in meeting a course objective is provided by a grade. To provide a report of student progress that can be compared to other NPS students and those at other accredited institutions, the grade point average is then calculated by the NPS Student Management Database in the NPS Office of Administration as follows, and recorded in each student's official transcript.

The NPS Academic Catalog defines the quarter-hour value (course credit) for a class at NPS as "its scheduled number of weekly lecture hours, plus one-half of the scheduled number of laboratory hours" (NPS OR 2016, 16). To calculate each student's achievement in the class, its quarter-hour value course is multiplied by the point value of the student's grade, yielding a quality point value for the student's course work. For example, as explained in the NPS Academic Catalog, "consider a student who receives a grade of 'B' in a course that has three hours of lecture and two hours of lab. The quarter-hour value of four quarter-hours is multiplied by the point value assigned for a grade of 'B' (3.0); this will result in 12.0 quality points for the course. The sum of the quality points for all courses, when divided by the sum of the quarter-hour credit of these courses, provides a weighted evaluation, a grade point average, termed the Quality Point Rating (QPR)" (NPS OR 2016, 17).

Grade point averages for different courses of study, as determined by a student's program, are reflected in this MBA project research through the analysis of three QPR measurements. The total course grade point average (TQPR) reflects the grades for all courses a student has taken at NPS. This total course measurement, for example, can include courses for certificates and other degree programs at NPS, in the case of a second

degree or transfer from another degree program. Secondly, the program curriculum course grade point average (CQPR) includes grades only for those courses required for graduation by the student's specific MBA program. Lastly, the core course grade point average (CoreQPR) evaluates grades for the eight core courses required in common by all NPS MBA and EMBA programs.

Student CoreQPR grade point averages were calculated as follows. A qualitative analysis of the course matrix for each resident MBA and EMBA curriculum was performed to identify core courses they required in common; these courses are reflected in Table 1. Individual student course and grade data was then collected from the NPS Student Management Database for the sample population of students who began their MBA programs in academic years 2006 through 2013. Non-core course data was then removed from the individual student course and grade data. Core QPRs for the MBA curricula were calculated in accordance with the NPS Academic Catalog and Policy Manual, by dividing the summation of calculated core course quality points by the summation of core course units.

2. Graduation Rates

Graduation rates provide another factor used in the current study, and are calculated based on the expected date of MBA program completion for each NPS student. Student who graduate on or before their expected graduation date are considered to be an on-time graduate. Those students who graduate after their original expected graduation date are considered to be a late graduate. Both on-time and late graduates are deemed graduates. Students who have not yet graduated due to thesis extension or will not graduate due to attrition are here considered a non-grad.

The data provided by NPS MBA student transcripts including the different grade point averages (QPR) and program completion dates (graduation rates) are analyzed in this project to learn about the differences between resident and DL programs. In addition to analyzing student success outcomes provided by student transcripts, more qualitative data including student perceptions of their program experience is also analyzed for comparisons between resident and DL MBA programs.

C. GRADUATING STUDENT SURVEY: STUDENT ACADEMIC EXPERIENCE MEASURE

Lastly, to provide an understanding of student success from the point of view of the students themselves, I performed a qualitative analysis of three key questions within the Graduating Student Survey (GSS). In addition I completed a response rate analysis. The GSS provides submitted responses by students upon completion of their degree programs. For this project I collected and reviewed GSS Responses for GSBPP students for the graduation academic years of 2010 through 2015.

In order to observe between-group differences for resident and DL students in the NPS MBA programs, four areas were assessed: entry requirements (APC), grade point averages (TQPR, CQPR, Core QPR), graduation status (on-time graduation, late graduation, did not graduate), and online responses to three survey questions assessing student NPS MBA program experience. I evaluated the findings, without controls, using different analyses. These analyses were conducted to contribute to greater awareness of between-group differences that might potentially inform more comprehensive studies aimed at improving Resident and DL MBA program quality.

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V. COMPARING STUDENT OUTCOMES ACROSS DELIVERY MODES

After collecting resident and DL MBA student data included in this MBA project research, I performed analyses that evaluated the following factors. First were NPS entry requirements (APC) for MBA and EMBA students. I also included an examination of student grade point averages, grouped to reflect all NPS courses taken during matriculation for the MBA or the EMBA (TQPR), all MBA or EMBA program-specific courses (CQPR), and all core courses required both by the MBA and the EMBA programs (CoreQPR). I also examined graduation rates according to graduation status (on-time graduates, late graduates, graduates, and non-graduates). These analyses were conducted using t-tests of unequal variances, correlation tests and a mean analysis. All analyses were performed to identify factors that may improve understanding of the potential impact on NPS MBA student success of preparedness, as measured by program entry requirements, and student experiences of quality and support during matriculation, as reported in the GSS.

These analyses were conducted to evaluate between-group differences in resident and DL MBA programs. These analyses did not use the preferred research analysis method of propensity score matching nor control for well-known and important influences on student outcomes. Such influences may include differences that exist in syllabi, teaching quality, testing methods, learning approaches and other known contributors or inhibitors of student success. Nevertheless the present data, obtained through analyses of overall student success measures for resident and DL MBA students at NPS, do offer preliminary results on specific differences between the two delivery modes, bringing attention to areas that may need improvement in the defense focused NPS MBA programs.

A. T-TESTS

To analyze NPS entry requirements (APC) and the three types of grade point average, as well as grades from the eight *individual* core courses required by both the

resident and DL programs, I used t-tests to observe any between-group differences in means that proved significant at the 95% confidence level. Differences between the two delivery modes were observed in t-test and mean results for the three MBA student sample sets. These three sets included: civilian and military students, military students only, and students grouped by gender for all student success factors, except their curriculum course grade point averages. These mean and t-test analyses of NPS MBA student success factors yield the outcomes shown in Table 2.

Table 2. Summary Statistics of Student Success Factors: APCs and GPAs.

	Resident(Res)		Distance Learning(DL)		Res/DL	Reject Null Ho = Justification for Research	Cannot Reject Null Ho=No Justification for Research
	Mean	SD	Mean	SD	Diff	Significant	Insignificant
APCs							
Civilian and Military Combined (ALL)	211.6	105	188.5	122.5	2.54E-05 ***	✓	
Military (ALL)	212.6	104.1	183.3	121.1	1.17E-06 ***	✓	
Civilian and Military Combined (Female)	191.2	109.5	194.9	125.8	0.824		✓
Civilian and Military Combined (Male)	213.6	103.9	187.5	122.1	7.49E-06 ***	✓	
Military (Female)	195.4	109.7	172.9	135.4	0.339		✓
Military (Male)	214.3	103.4	184.2	120.2	1.37E-06 ***	✓	
TQPR							
Civilian and Military Combined (ALL)	3.71	0.22	3.72	0.43	0.671		✓
Military (ALL)	3.71	0.22	3.73	0.41	0.424		✓
Civilian and Military Combined (Female)	3.68	0.24	3.72	0.20	0.329		✓
Civilian and Military Combined (Male)	3.71	0.22	3.72	0.45	0.822		✓
Military (Female)	3.68	0.24	3.72	0.21	0.346		✓
Military (Male)	3.71	0.22	3.73	0.22	0.501		✓
CoreQPR							
Civilian and Military Combined (ALL)	3.65	0.47	3.73	0.42	4.25E-29 ***	✓	
Military (ALL)	3.65	0.47	3.74	0.41	2.80E-30 ***	✓	
Civilian and Military Combined (Female)	3.61	0.51	3.67	0.48	0.021 *	✓	
Civilian and Military Combined (Male)	3.65	0.47	3.74	0.40	6.11E-31 ***	✓	
Military (Female)	3.61	0.52	3.72	0.48	0.046 *	✓	
Military (Male)	3.71	0.47	3.73	0.40	5.72E-30 ***	✓	

Source: See text for data collection methods and details. * p<.05, ** p<.01, *** p<.001. AY2009, APC Sample Size: NPS Admissions created the Admissions Data Management System (AMS) for students seeking admissions to NPS programs. All APCs are calculated manually, but prior to AY2009 APC scores for entering students were not all manually entered into this system. A total of 61 who enrolled prior to AY2009 are missing APC scores.

1. NPS Entry Requirements: APCs

For the entry criteria variable (APC), the total sample size for all MBA civilian and military students was N=1,747 students, and for military students only, the sample size was N=1,473 students. For these populations, t-test findings indicated differences to be somewhat significant, at p=2.54E-05 and p=1.17E-06, respectively. A similar finding was observed for the larger all male (N=1,549) and the smaller military-only male (N=1,349) populations, p=7.49E-06 and p=1.37 E-06. By contrast, the results were

insignificant for female students, both when analyzed by the larger sample of civilian-and-military females (N=198), at p=0.824 and for the smaller military-only female sample (N=124), at p=0.339. This research finding of a gender difference in student outcomes by entry criteria for the all-inclusive male group and the military-only male group may merit further study and clarification to understand factors associated with gender that have the potential to influence student success.

2. Student Evaluation: Grade Point Averages

For the two grade point average variables analyzed by t-test, all NPS courses (TQPR) and all core courses (Core QPR), the total sample size for both MBA and EMBA civilian-and-military students was N=1,808. A very strong between-group correlation (.99) was noted for grade point averages (TQPR and CQPR), justifying the interchangeable use of one of the two QPR values to simplify analysis (for a more detailed discussion see Correlation Analysis). Of this total sample size (N=1,808), a total of 917 students were enrolled in the seven resident MBA programs, with a total of 891 students enrolled in the two DL EMBA programs. Overall, no between-group differences were noted in results for the civilian-and-military and the military-only student sample sets for TQPR. Similarly, T-tests for student grade point averages for all courses completed (TQPR), as well as for both gender samples, showed no significant between-group differences.

However, the grade point averages for core courses shared by the MBA and EMBA programs (CoreQPR) did point to a somewhat significant between-group difference in both the overall sample and by gender differentiate sample populations. These findings suggest that further investigation is warranted to identify specific factors that may influence student outcomes, as indicated by grade, for the eight core courses common to the MBA and EMBA programs. Table 3 displays these core course outcomes.

Table 3. Summary Statistics of Student MBA Core Course Level Grades.

	Resident(Res)		Distance Learning(DL)		Res/DL	Reject Null Ho = Justification for Research	Cannot Reject Null Ho=No Justification for Research
	Mean	SD	Mean	SD	Diff	Significant	Insignificant
Core MBA Course Grades							
GB3042 Res/GE3042 DL	3.65	0.44	3.76	0.39	2.93E-06 ***	✓	
GB3051 Res/ GE3051 DL	3.60	0.47	3.41	0.61	0.0013 **	✓	
GB3070 Res/ GE3070 DL	3.64	0.39	3.56	0.52	0.0015 **	✓	
GB4052 Res/ GE4052 DL	3.71	0.54	3.80	0.40	9.70E-05 ***	✓	
GB4053 Res/GE4053 DL	3.77	0.25	3.64	0.36	4.52E-15 ***	✓	
GB3010 Res/ GE3010 DL	3.85	0.21	3.87	0.34	0.22		✓
GB3050 Res/GE3050 DL	3.69	0.51	3.73	0.44	0.17		✓
GB4043 Res/ GE4043 DL	3.68	0.52	3.73	0.43	0.078		✓

Source: See text for data collection methods and details. * p<.05, ** p<.01, *** p<.001.

3. Student Evaluation: MBA Individual Core Course Grades

I conducted a preliminary analysis of core course outcomes in an effort to help identify factors that may drive between-group differences observed for resident and DL student grade point average for core courses common to both programs (CoreQPR). Through further examination of significant findings by each specific core course, I identified five courses among the eight core courses that drove the statistically significant finding of between-group differences in CoreQPR. These courses were GB3042 Operations Management, GB3051 Cost Management, GB3070 Economics of the Global Defense Environment, GB4052 Managerial Finance, and GB 4053 Defense Budget and Financial Management Policy.

The three other courses, GB3010 Managing for Organizational Effectiveness, GB3050 Financial Reporting and Analysis, and GB4043 Business Modeling Analysis, yielded insignificant outcomes. Of these three, GB3050, an introductory accounting course that is mathematically intensive, was a conspicuous outlier, particularly given findings in the literature that would suggest the likelihood of a statistically significant between-group difference for this class (Anstine and Skidmore 2005; Ni 2013). In this project's findings, no such difference was observed.

Also in contrast to findings in the literature, which suggest that courses having a weaker mathematics component are unlikely to show any between-group significant difference (Harmon, Alpert, and Lambrinos 2014; Gibson 2008), GB3010, an introductory organizational management course, shows a statistically significant

difference. Moreover, for the majority of core courses required by both the resident and DL programs, some statistical significance appears to exist. These findings may indicate other potential areas for more comprehensive course level research.

B. CORRELATION ANALYSIS

I conducted a correlation analysis to establish between-group relationships for factors evaluated in this MBA project research that might benefit from a closer examination in future studies. These correlation analyses, conducted only as a preliminary inquiry, did not apply controls for influential factors, as would be required to obtain more conclusive findings. Key findings from these studies are first summarized, with the specific methods used to obtain them then provided.

A very strong between-group correlation (.99) was noted for the grade point averages TQPR and CQPR justifying; additionally, both TQPR and CQPR correlated strongly (.81) to MBA core course grade point averages (CoreQPR). Thus, in this study the grade point averages reflected in the student CoreQPR can be considered a reasonable proxy for all three grade point averages in this study. By contrast, the correlation coefficient of .55 for military and civilian TQPRs shows only a moderate between-group relationship, suggesting that the use of one sample population over the other may be inadvisable.

The initial correlation analysis completed for this MBA project research examined admission criteria (APC) and the three grade point averages (TQPR, CQPR, and CoreQPR). To make it possible to perform correlation analyses for the factors on-time graduation, waivers of admission criteria (APC) and grade point average (QPR), binary numeral conversions were accomplished by an identical methodology for all factors. Firstly, the factors were converted to a Y- N binary option, with each option then coded either as Y=0 or N=1 for subsequent analysis.

The correlation coefficient results yielded from this process are shown in Table 4. These results indicate a weak negative correlation between admission criteria (APC) and each of the three grade point averages (TQPR, CQPR, CoreQPR). This finding is

important to note, as it indicates that no obvious relationship exists between students' academic criteria score (APC) and success in their MBA or EMBA program.

Table 4. APC Correlation Coefficient Table: APCs versus GPAs (QPRs).

APC	TQPR	CQPR	CoreQPR
Civilian & Military	-0.12	-0.12	-0.23
Military Only	-0.13	-0.13	-0.23

Source: See text for data collection methods and details.

Students who are seeking admission into a NPS MBA resident or DL program, but who do not meet NPS admissions criteria for any one of the APC digits, may receive an APC waiver from the program department administration (Dooley, personal communication, 2017). I therefore further evaluated admissions criteria (APC) waivers so as to identify any relationship between these waivers and the three graduation types that might indicate the potential impact of a waiver on students' successful program completion. Table 5 displays the percentage of waivers required by Military and Civilian student populations who began their MBA or EMBA programs in AY2006-AY2013.

Table 5. Percentage of APC Waivers by Start AY and Student Type.

		Start AY2006		Start AY2007		Start AY2008		Start AY2009		Start AY2010	
Delivery Mode	Student Type	Student Count	% of Waivers	Student Count	% of Waivers	Student Count	% of Waivers	Student Count	% of Waivers	Student Count	% of Waivers
Res	Military	147	22%	86	27%	100	17%	79	24%	114	16%
	Civilian	16	19%	4	25%	7	43%	9	33%	8	38%
Res Total	Res	164	21%	90	27%	107	19%	88	25%	122	17%
DL	Military	52	6%	78	23%	93	22%	98	20%	79	34%
	Civilian	2	0%	21	29%	14	21%	34	50%	49	53%
DL Total	DL	54	6%	99	24%	107	21%	132	28%	128	41%
Grand Total	ALL	218	17%	189	25%	214	20%	220	27%	250	30%

		Start AY2011		Start AY2012		Start AY2013		Total AY2006-13	
Delivery Mode	Student Type	Student Count	% of Waivers	Student Count	% of Waivers	Student Count	% of Waivers	Student Count	% of Waivers
Res	Military	88	20%	109	16%	120	14%	843	19%
	Civilian	8	13%	6	17%	15	7%	73	22%
Res Total	Res	96	20%	116	16%	138	13%	921	19%
DL	Military	108	22%	98	24%	72	22%	678	22%
	Civilian	24	50%	35	23%	34	38%	213	40%
DL Total	DL	132	27%	133	24%	106	27%	891	27%
Grand Total	ALL	228	24%	249	20%	244	19%	1812	23%

Source: See text for data collection methods and details. Appendix Table 12 delineates APC waivers by Military Service.

Table 6 displays the correlation of APC waivers to three of the graduation categories (on-time graduate, graduate, non-graduate). Resident and DL students who required waivers, whether in the civilian-and-military or the military-only sample, have a

weak negative correlation to the on-time graduated and graduated categories. Resident and DL students who did not graduate have a weak positive correlation to waivers of admissions criteria (APC). These marginal relationships loosely coincide with other research, such as the study by Christensen and Nance (2012), who found that students not meeting entry criteria might have higher dropout rates. Further exploration of the relationships between entry criteria and graduation may thus be warranted.

Table 6. APC Waiver versus Graduation Type by Student Population Type and Res/DL.

	On-Time Res	On-Time DL	Grad-Res	Grad-DL	Non-Grad Res	Non-Grad DL
Waiver(APC-Entry Criteria Not Met) ALL	-0.094	-0.075	-0.096	-0.116	0.087	0.116
Waiver(APC-Entry Criteria Not Met) MIL	-0.122	-0.077	-0.071	-0.140	0.073	0.140

Source: See text for data collection methods and details. On-Time is defined as students who graduate at the time expected without an extension. Grad is defined as students who graduated within or beyond the expected graduation date, with or without extensions. Non-Grad is defined as a student who has yet to graduate.

A correlation analysis of admissions criteria (APC) waivers to CoreQPR grade point averages was conducted and is displayed in Table 7. For DL EMBA students, a weak positive correlation was observed between student grade point averages (CoreQPR) equal to a "C" or lower and entry criteria (APC) waivers. Similarly, a weak positive correlation was noted for resident MBA students who required waivers and for those who obtained a failing grade point average. These results may provide additional support for the findings of Christensen and Nance (2012), who report that students with lower undergraduate GPAs are also less likely to be successful in their MBA programs.

Table 7. APC Waiver versus Core QPR by Student Population Sample and Res/DL.

	ALL Res Waivers	ALL DL Waivers	MIL ONLY Res Waivers	MIL ONLY DL Waivers
A (3.7-4)	-0.142	-0.162	-0.124	-0.191
B (2.7-3.69)	0.117	0.139	0.096	0.166
C (1.7-2.69)	-0.020	0.126	-0.021	0.144
D (1-1.69)	n/a	n/a	n/a	n/a
F (<1)	0.051	n/a	0.054	n/a

Source: See text for data collection methods and details.

In a correlation analysis of graduation types to CoreQPR grade point averages, displayed in Table 8, no clear trend can be seen**.** A CoreQPR grade point average of "A" shows a weak positive correlation to both resident and DL graduation categories. However, for both these categories, a weak negative correlation exists with a CoreQPR grade point average of "C." No conclusive correlation can be observed between CoreQPRs grade point averages of "B," "D," and "F" and student graduation categories. This preliminary correlation analysis thus does not support a relationship between student grade point averages in resident and DL MBA commonly required core courses and the three student graduation categories evaluated.

Table 8. CoreQPR Correlation Coefficient Table:
CoreQPR versus Graduation Type.

Military Students GPA	On-Time Res	On-Time DL	Grad-Res	Grad-DL	Non-Grad Res	Non-Grad DL
A (3.7-4)	0.064	0.122	0.175	0.463	0.183	0.023
B (2.7-3.69)	0.010	-0.042	-0.165	-0.427	-0.229	-0.017
C (1.7-2.69)	-0.123	-0.225	-0.227	-0.267	-0.010	-0.015
D (1-1.69)	n/a	n/a	n/a	n/a	n/a	n/a
F (<1)	-0.137	n/a	0.009	n/a	-0.017	n/a

Source: See text for data collection methods and details. On-Time is defined as students who graduate at the time expected without an extension. Grad is defined as students who graduated within or beyond the expected graduation date, with or without extensions. Non-Grad is defined as a student who has yet to graduate.

In summary, no obvious relationship was seen from the correlation analysis performed between student entry criteria scores and the three grade point averages. However, some weak relationships were observed between the binary factors of APC waivers and DL-student lower CoreQPR grade point averages. Another weak relationship was found between APC waivers and students who do not graduate. Taken together, these findings offer some support for earlier research that DL MBA students who do not meet APC admissions criteria are at risk of performing poorly. However, for both resident and DL MBA students, mixed findings were observed for a relationship between CoreQPR grade point average ranges and the three graduation types. The variations observed in these results motivated me to further analyze the three different grade point averages by performing a mean analysis.

C. MEAN ANALYSIS

The mean analysis of grade point averages was calculated by averaging individual student GPAs provided by the three grade point average types (TQPR, CQPR, CoreQPR). An additional analysis evaluated these factors by program instruction mode (Resident and DL), civilian-and-military and military-only student status and academic year program start date (2006 through 2013). Results obtained from this analysis are displayed in Table 9.

Table 9. MBA Mean Analysis by GPA (QPR) Type and Student Sample Type (Civilian-and-Military and Military-Only).

	Civilian & Military						Military ONLY					
	Resident			Distance Learning (DL)			Resident			Distance Learning (DL)		
	TQPR	CQPR	CoreQPR	TQPR	CQPR	CoreQPR	TQPR	CQPR	CoreQPR	TQPR	CQPR	CoreQPR
2006	3.72	3.72	3.67	3.66	3.66	3.63	3.73	3.72	3.68	3.66	3.66	3.63
2007	3.69	3.68	3.64	3.67	3.67	3.68	3.69	3.68	3.63	3.67	3.67	3.68
2008	3.65	3.65	3.61	3.57	3.57	3.71	3.65	3.65	3.61	3.64	3.64	3.71
2009	3.66	3.66	3.56	3.73	3.73	3.70	3.64	3.65	3.54	3.72	3.72	3.68
2010	3.72	3.72	3.69	3.75	3.75	3.71	3.73	3.74	3.71	3.77	3.77	3.70
2011	3.72	3.72	3.65	3.77	3.77	3.77	3.71	3.71	3.64	3.81	3.81	3.83
2012	3.75	3.75	3.69	3.72	3.72	3.75	3.75	3.75	3.69	3.71	3.71	3.75
2013	3.75	3.76	3.71	3.78	3.79	3.80	3.76	3.77	3.72	3.77	3.78	3.81
All Years	3.71	3.71	3.66	3.72	3.72	3.73	3.71	3.71	3.66	3.73	3.73	3.73

Source: See text for data collection methods and details. Includes 0.0 QPRs for Non-Grads.

For the cumulative academic years 2006–2013, the mean grade point averages for all three QPRs observed (TQPR, CQPR, CoreQPR) in both the military-and-civilian and military-only populations, DL QPRs are slightly higher than those of resident students. Similarly, for students who began their program in AY2010, all three QPRs are slightly higher for DL than for resident students. In addition, for students starting in AY2007, 2008, and 2012, CoreQPRs are higher for DL than for resident students. These CoreQPR findings differ slightly from other researchers' results for TQPR among NPS students across all programs.

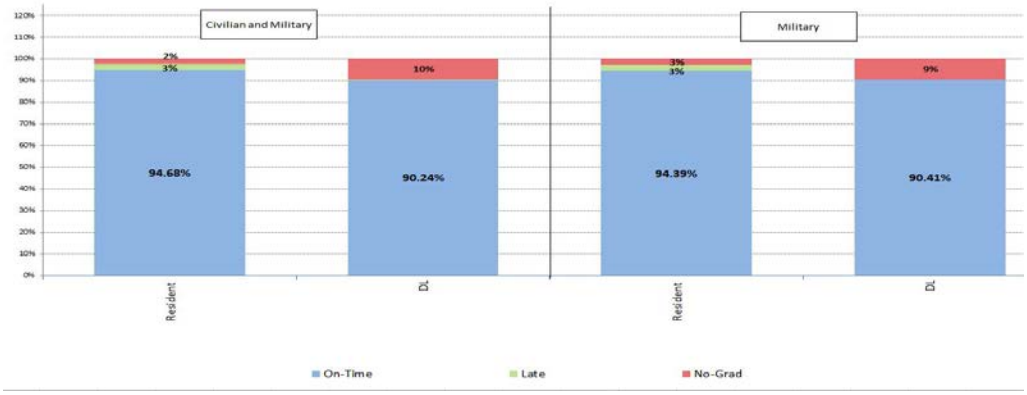
In contrast, in AY2006, when examining student grade point averages for each separate year, the means for all three grade point averages (QPR) are slightly higher for resident than for DL students. Moreover, in start years AY2007, 2008 and 2012, both the TQPR and CQPR resident means are slightly higher than those of DL students. These

results are similar to the findings in previous NPS studies by Fodor (2016) and Bacolod and Chaudhary (2016). Taken together these results do not consistently confirm nor differ with the findings in previous studies, suggesting that a more comprehensive analysis might be useful.

D. GRADUATION RATE DATA

Three of the graduation categories (on-time graduate, late graduate, non-graduate) were evaluated to help substantiate other factors contributing to or impeding successful program completion. These graduation rate data were examined to determine between group differences in outcomes for resident MBA and DL EMBA students. Graduation is a primary student success factor evaluated in this project, with the three grade point averages (QPR) also considered of particular importance. Figure 4 displays graduation rate data.

Figure 4. MBA Graduation Type by Student Population Sample, and Res/DL, Cumulative Start Academic Years 2006–2013.



Source: See text for data collection methods and details. Graduate data collected displays the proportions for three of the graduate categories. On-Time is defined as students who graduate at the time expected without an extension. Late is defined as students who graduate beyond the expected graduation date, with extensions. Non-Grad is defined as a student who has yet to graduate. Appendix Figures 5 and 6 provide delineation by academic start year.

All start academic years show that DL students have an almost 5% lower on-time graduation rate than that of resident students, and an almost 8% lower overall graduation rate. The finding in this smaller sample of MBA students supports findings of Bacolod

and Chaudhary (2016) for NPS students across all programs in the same years, AY2006-AY2013. Bacolod and Chaudhary (2016) report that DL students across all programs are 15% less likely to graduate than their resident counterparts. However, in the MBA-only cohorts examined in this project, DL MBA students fared better than NPS DL students across all programs in terms of successful program completion (Bacolod and Chaudhary 2016).

In line with overarching study goals discussed by Ni (2013), I considered a comprehensive evaluation of a variety of measures to be important for identifying key factors that support student success. Particularly after these project analyses revealed mixed results for many measures obtained from student records, I became motivated to expand my examination to include student viewpoints about their MBA programs and academic experiences. I thus attempted in the following section to address discontinuity of project findings by including student responses to those Graduating Student Survey (GSS) questions that address student perceptions of their program experience.

E. ACADEMIC EXPERIENCE MEASURE: GRADUATING STUDENT SURVEY

For this MBA project, I performed a qualitative analysis of Graduating Student Survey (GSS) responses to three key questions addressing resident and DL student perceptions of their MBA academic experience at NPS. For this analysis I performed a response rate analysis and examined GSS responses for the graduation academic years 2010 through 2015.

The GSS survey instrument collects responses submitted by students upon completion of their degree programs. Through a total of 37 questions, the survey provides a mechanism for students to rate their NPS programs and experience on a five point Likert scale (low to high). Three questions (Q6, Q11, Q31) assess students' perception of their program and opinion of their program's success. For this segment of my MBA project research, I collected a total of 1,005 accumulated GSS responses from GSBPP degree students who graduated in academic years AY2010-AY2015. Of these responses,

762 were from students enrolled in the eight specialized resident MBA programs and the two EMBA programs.

For the graduation years included in for analysis, more than half of all NPS GSBPP degree program civilian and military graduate students responded. Sheehan (2001), who evaluated response rates for different survey delivery modes, reports that many factors influence email solicited survey response rates, including the year it is solicited. University of Texas (n.d.) stated that the standard percentage for a "good" response rate for email surveys is greater than or equal to 50%. Therefore, for the years examined in this project, NPS GSBPP students have "good" survey response rates for the email solicited GSS instrument. When observing military-only students enrolled in all GSBPP degree programs, the response rate increased to 59%, as reflected in Table 10. By contrast, GSBPP DL students have a much lower response rate, irrespective of program; those who do respond, report a more positive opinion of their program experience than resident students. When observing only GSBPP MBA degree programs, whether resident or DL, the response rate decreases slightly for most years, indicating a slightly lower willingness of MBA students to participate in the survey.

Table 10. Graduating Student Survey (GSS) Response Rates for Students Graduating AY2010-AY2015 by Year.

	Civilian & Military			Military ONLY		
	Resident	DL	All	Resident	DL	ALL
GSBPP All Students						
2010	78%	44%	57%	75%	22%	60%
2011	84%	n/a	37%	84%	n/a	46%
2012	73%	39%	39%	74%	6%	47%
2013	81%	54%	69%	80%	57%	71%
2014	60%	25%	53%	60%	44%	62%
2015	76%	21%	73%	73%	54%	65%
All Years	75%	51%	55%	74%	30%	59%
MBA Only Students						
2010	86%	23%	52%	83%	26%	59%
2011	92%	n/a	36%	92%	n/a	43%
2012	77%	0%	40%	77%	0%	46%
2013	88%	52%	67%	88%	55%	70%
2014	64%	59%	52%	65%	59%	63%
2015	75%	48%	65%	71%	51%	63%
All Years	79%	30%	52%	78%	32%	57%

Source: See text for data collection methods and details. *2011 Distance Learning (DL) data is not available.

For the scope of this project three relevant questions of the 37 in the survey, are carefully selected to provide some measure of student satisfaction with their program or experience at NPS. The first question evaluated, Q6 states, "Completing a thesis, group project or capstone project was a valuable component of my NPS education;" the second question assessed, Q11 states, "My academic background was adequate preparation for successful completion of my program;" the third, Q31 states, "I would recommend NPS to other military officers or defense civilians" (Affairs, 2015). These survey items provide an indication of graduates' reflection on the value of their NPS programs and are displayed in in Table 11.

Table 11. GSS Response Mean Analysis for Students Graduating AY2010-2015.

	Civilian & Military						Military Only					
	Resident		*DL*		*ALL*		*Resident*		*DL*		*ALL*	
	# Responses	*Mean*	*# Responses*	*Mean*	*# Response*	*Mean*	*# Responses*	*Mean*	*# Responses*	*Mean*	*# Responses*	*Mean*
Q6												
MBA	493	3.54	204	4.43	697	3.84	484	3.52	158	4.51	642	3.77
ALL GSBPP	620	3.62	291	4.31	911	3.84	606	3.60	164	4.48	770	3.79
Q11												
MBA	500	4.28	90	5.00	590	4.38	490	4.28	160	4.57	650	4.35
ALL GSBPP	629	4.24	179	4.77	808	4.36	614	4.24	166	4.55	780	4.31
Q31												
MBA	488	4.45	184	4.66	672	4.53	478	4.44	146	4.62	624	4.49
ALL GSBPP	616	4.47	260	4.63	876	4.52	601	4.46	150	4.63	751	4.50

Source: See text for data collection methods and details. Null responses are removed and not calculated in the mean response analysis.*2011 DL Data is not available.

Mean responses for GSBPP and MBA students in both the civilian-and-military and military-only samples followed the same general pattern. Of the three questions analyzed, MBA graduate students rated as lowest, Q6, which probed the perceived value of the students' thesis, group project or capstone project. In response to Q11, MBA graduate students reported feeling that their academic background had been adequate for successful completion of their program. For Q31, on whether or not MBA graduates would recommend NPS to other military officers and defense civilians, there was a strong positive response. Of note, DL students rated these three survey items higher than the resident counterparts for both civilian-and-military and military-only samples. Overall results for DL MBA students show that, although they have lower response rates, those students who do respond are more satisfied with their program experience than their resident counterparts. This finding mirrors that of all GSBPP DL students.

It has been suggested that people in an environment they consider positive are motivated and will perform well (Seppala and Cameron 2015). This view is only somewhat supported by this MBA project's findings. For example, the results of the DL MBA GSS survey responses show both that DL students have a more positive perspective of their academic program experience and that their cumulative AY2006-2013 grade point averages are generally higher than those of their resident peers. However, DL MBA students have lower overall graduation rates. That noted, overall MBA program performance of DL MBA students who do complete their programs is stronger than that of their resident student counterparts.

The project's t-test results provide some potential insight into the between-group differences of resident and DL outcomes. For example, statistically significant between-group differences in Resident and DL samples for five of the eight courses measured by the CoreQPR appear to exist. This finding seems also to drive the between group-differences that have been or are observed in the CoreQPR for all MBA student samples. Also, although no relationship was found between entry criteria APC scores and the three grade point averages, the project's analysis of APC scores for the entire population of MBA students did reveal some between-group differences. These differences appeared to be driven mainly by the "male" sample population. Weak correlations were noted only between DL MBA students with admissions criteria waivers and both CoreQPR grade point average and failure to graduate. The APC findings support prior research findings that DL students do not perform as well as resident students when inadequately prepared (Christensen and Nance 2012).

Although all project findings are mixed, many of the results point to strengths in DL student outcomes. For NPS MBA students, many DL student success factors are equal to, if not better than, those of resident students. A notable exception to these generally positive findings, however, is observed for DL graduation rates.

VI. CONCLUSION

My analysis collected student data from the Naval Postgraduate School (NPS) Student Management Database for resident and distance learning (DL) students who started their MBA programs in academic years 2006 through 2013. The student data includes APC entry requirements, total course, program and core course GPAs, graduation rates. For the graduation years of AY2010-2015 student responses from the Graduating Student Survey (GSS) was collected. Following the collection of data, I analyzed the data using t-tests, correlation and mean analyses, graduation rates, and analysis of GSS student responses. This general approach to data analysis is intended to provide preliminary observations on between-group differences for DL and resident students and does not control for such factors as differences in syllabi, teaching quality, testing methods, and other known influences on student success. Project analyses were conducted so as to assist in identifying factors that could be explored in further studies relating to student success in resident and DL programs.

The literature suggests a common theme amongst the majority of the articles: hybridization of resident and DL programs provides the most beneficial learning environment for MBA students. Higher rates of success in resident and hybrid programs may be due to the weighting down of DL program success rates in mathematically intensive courses. However, the convenience of DL programs for busy professionals can outweigh this benefit of a resident program.

This MBA project's findings suggest that DL MBA programs may still be working to find ways to provide equitable learning environments and to address accreditation challenges. Hybridization of resident and DL programs may offer solutions to the shortcomings of both. Hybrid programs have the potential to address such accrediting body concerns as the establishment of connections with peers through short resident portions of the program, while meeting the needs of busy working professionals. They also can address the desires of resident students to have the option to review lectures and course materials outside class meetings.

One factor that deserves further exploration for both resident and DL MBA programs at NPS is the effect of peers on individual student success. Peer effects have been studied as important to educational outcomes, but no conclusive findings have emerged (Sacerdote 2014). These effects and how they may differ for resident and DL students are particularly important in the context of MBA group projects. Further, they may be even more important military and defense MBA programs, and so deserve further investigation in future studies.

The student data analyzed in this project mirrors portions of the findings from the literature review. There is little correlation between students who do not meet entry criteria (APC) and their composite grade point average; however, there is a weak correlation between not meeting entry criteria and being less likely to graduate. In the mean grade point average analysis, NPS DL MBA students perform as well or better than their resident counterparts do. Fodor (2016), in his analysis of NPS GSBPP students alone, finds similar results, with DL students performing as well as resident students. Nevertheless, the results of this MBA project's research indicate that student completion rates for DL MBA students are lower by 8% than these rates for their resident MBA peers. These results are analogous with both Fodor (2016) and Bacolod and Chaudhary (2016), who report that NPS DL students across all programs have approximately 15% lower rates of program completion than their resident peers.

The qualitative analysis of student opinion as reflected in responses to the Graduating Student Survey showed that student ratings of their programs were higher for DL than for resident students. These results suggest that MBA DL students have positive feelings about their degree programs and experiences at NPS, a measurable outcome of MBA student success. While the results of all of these analyses are mixed, the majority of the findings are positive for DL student outcomes. Only one real exception exists, which is the lower rates of graduation for DL students seen in both the MBA only and all GSBPP programs.

As NPS DL MBA courses are offered synchronously, and students share a computer-assisted classroom when in remote locations, better ways to foster community connections can be developed. Such innovation may assist in improving program

completion rates. NPS DL MBA student overall success is hampered by those students who do not complete their program, but a strong sense of community might help those who become discouraged in completing their degrees. Efforts to further this sense of community may in turn suggest new ways of approaching communication and peer effects in learning environments. By lessening the communication gaps that occur in the resident and DL environments, NPS can successfully support the needs of the Navy and Armed Forces to educate our Military officers while cultivating a collaborative community environment.

Finally, the differences observed in resident and DL programs may not so much reflect a difference in student samples, as the current stage of development of DL programs. In addition to the intangible cost of common perceptions that DL programs are lower in quality, the traditions and activities that serve to connect teaching and learning communities in resident educational environments are not yet fully developed in DL educational communities. This is not surprising, as the evaluation of programs, courses, faculty and students in resident education has evolved since the earliest universities in traditional societies.

In the 1990s, a greater emphasis on program assessment arose alongside the advances in technological capacity to store and compare data (Kaplan and Haenlein 2016). Future studies of resident and DL delivery modes might examine, for example, how to assess DL class participation in new, more innovative and appropriate ways. Similarly a more effective use of videos and podcasts could provide new means for evaluating DL student progress. Future studies could also examine discussion board posts, both for correlations with class participation and other course level scores, and for evidence of successful peer and community connection strategies.

Focus groups among students and faculty might also help identify attitudes and approaches able to improve the ability for DL students to understand material or grasp concepts when immediate communications are not possible. Further studies could focus on better identifying factors that negatively influence DL student graduation and on-time graduation. Future research could address if DL students have lower program completion

rates than resident students because of mathematic competencies, communication issues, or personal issues.

Finally, using findings from the studies currently available, efforts should be made to more finely identify differences in the way learning and the relationships that support learning occur in the DL environment, and to develop better assessments for capturing achievement. Such studies could help improve DL educational opportunities in higher education, and can particularly support the benefits of DL opportunities for Military and Defense students.

APPENDIX

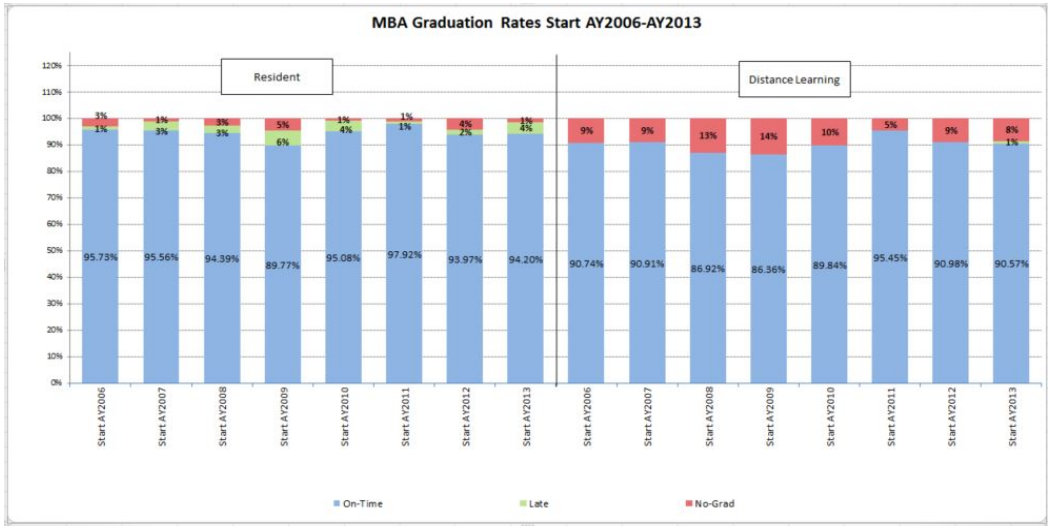
Table 12. Percentage of APC Waivers by Start AY and Student Type

		Start AY2006		Start AY2007		Start AY2008		Start AY2009	
Delivery Mode	Student Type	Student Count	% of Waivers	Student Count	% of Waivers	Student Count	% of Waivers	Student Count	% of Waivers
Res	USN/R	61	10%	50	24%	65	17%	56	18%
	USMC	17	35%	13	31%	13	23%	5	0%
	USA/R	9	33%	14	43%	11	9%	14	50%
	USCG	60	28%	9	11%	11	18%	4	50%
	Civilian	16	19%	4	25%	7	43%	9	33%
Res Total	Res	164	21%	90	27%	107	19%	88	25%
DL	USN/R	48	6%	73	23%	85	22%	94	18%
	USMC	2	0%	3	0%	4	0%	2	50%
	USA			1	100%	2	50%	2	100%
	USAF	2	0%	1	0%	2	0%		
	Civilian	2	0%	21	29%	14	21%	34	50%
DL Total	DL	54	6%	99	24%	107	21%	132	28%
Grand Total	ALL	218	17%	189	25%	214	20%	220	27%

		Start AY2010		Start AY2011		Start AY2012		Start AY2013		Total AY2006-13	
Delivery Mode	Student Type	Student Count	% of Waivers	Student Count	% of Waivers	Student Count	% of Waivers	Student Count	% of Waivers	Student Count	% of Waivers
Res	USN/R	62	11%	53	6%	62	16%	70	10%	479	14%
	USMC	11	18%	13	31%	14	7%	12	8%	98	21%
	USA/R	15	27%	11	45%	32	19%	18	28%	124	30%
	USCG	26	19%	11	55%	1	0%	20	20%	142	26%
	Civilian	8	38%	8	13%	6	17%	15	7%	73	22%
Res Total	Res	122	17%	96	20%	116	16%	138	13%	921	19%
DL	USN/R	76	33%	103	22%	88	27%	68	22%	635	23%
	USMC			4	25%	5	0%	3	33%	23	13%
	USA			1	0%	4	0%	1	0%	11	36%
	USAF	3	67%			1	0%			9	22%
	Civilian	49	53%	24	50%	35	23%	34	38%	213	40%
DL Total	DL	128	41%	132	27%	133	24%	106	27%	891	27%
Grand Total	ALL	250	30%	228	24%	249	20%	244	19%	1812	23%

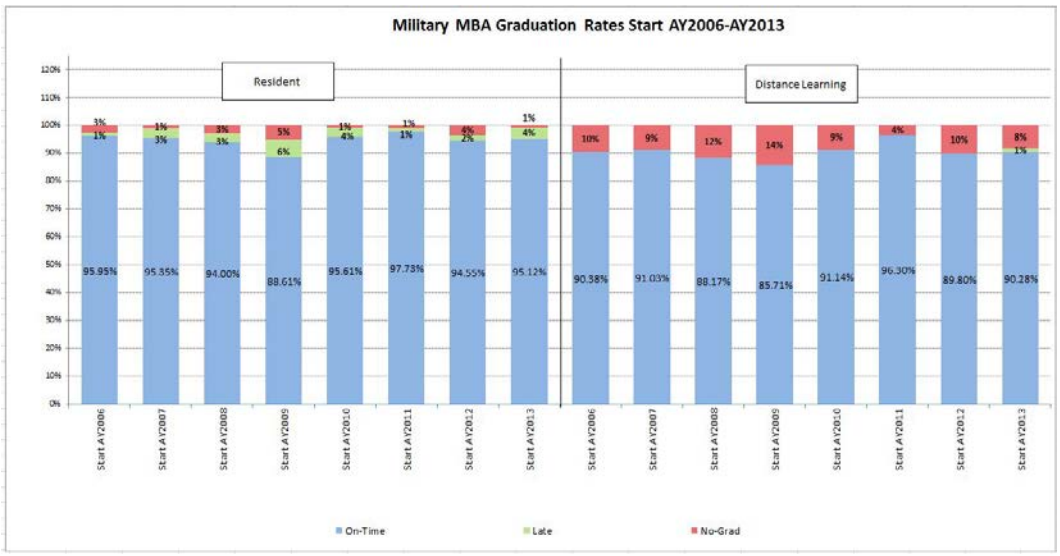
Source: See text for data collection methods and details.

Figure 5. MBA Graduation Type by All Student Population Sample and Res/DL.



Source: See text for data collection methods and details. Graduate data collected displays the proportions of the three graduate categories. On-Time is defined as students who graduate at the time expected without an extension. Late is defined as students who graduate beyond the expected graduation date, with extensions. Non-Grad is defined as a student who has yet to graduate.

Figure 6. MBA Graduation Type by Military Only Student Sample Population and Res/DL.



Source: See text for data collection methods and details. Graduate data collected displays the proportions of the three graduate categories. On-Time is defined as students who graduate at the time expected without an extension. Late is defined as students who graduate beyond the expected graduation date, with extensions. Non-Grad is defined as a student who has yet to graduate.

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